IMPACT OF SOCIAL PROTECTION PROGRAMS ON CHILD HEALTH AND EDUCATION IN GHANA

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ABSTRACT

MICHAEL J. PARK: The impact of social protection programs on child health and education in Ghana
(Under the direction of Sudhanshu Handa, PhD and John E. Paul, PhD)

Cash transfer programs are rapidly spreading across the developing world as a powerful tool to mitigate the short-term impacts of poverty and to break the inter-generational transfer of human capital deficits. With the increasing number of countries implementing cash transfer programs, it is essential to understand the impact of these programs, as well as how implementation issues affect intended outcomes.

The main objective of this dissertation was to examine the impact of an unconditional cash transfer program Livelihood Empowerment against Poverty (LEAP), on health and education outcomes in Ghana. Data for this study were obtained from the 2010 Institute of Statistical, Social, and Economic Research national household survey and the follow-up survey implemented by the University of North Carolina at Chapel Hill in 2012.

We first examined the efficiency of the targeting scheme of the LEAP Program. It appeared that the LEAP targeting was successful using the current eligibility criteria, and that the hybrid of categorical targeting, community-based targeting, and proxy means tests used in the LEAP targeting scheme was effective in reaching the poorest and most vulnerable households in Ghana. We also assessed the relative merits of cash transfer versus health insurance. For the cash transfer component of LEAP, we noted that the apparent negative impact of the cash transfer on health care utilization was more than offset by the positive impact of the health insurance component of LEAP on health care utilization, which implied an overall net increase in utilization. This accounting, plus the aggressive expansion of health

insurance among LEAP households, suggests that access to health care has increased significantly among the poor in rural Ghana. Results from this dissertation also indicate that the LEAP Program has positive impacts on children's access to schooling. The LEAP Program increased access to schooling at the secondary level, and at both primary and secondary levels improved the quality of access, with fewer days missed and less grade repetition.

These results show that the LEAP Program is a critical component of the National Social Protection Strategy and is essential to increase access to health and education services among poor and vulnerable households in Ghana.

To Perline, Jason, Jesse, and my parents.

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I am also indebted to my fellow students, faculty mentors, family, and friends for their support and encouragement since day one. I want to thank my parents and brothers for their constant support and encouragement to realize this achievement. I also want to thank my fellow student, Wayne Psek, and my brother, Edward Park, who have read and edited the many iterations of my dissertation and are now cash transfer experts. I want to especially thank my wife who was my main source of strength, love, and patience. To my sons, Jason and Jesse, thank you for your understanding of the missed weekends and late nights. You continue to serve as my inspiration in life.

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CCT	Conditional cash transfer
CGH	Coady-Grosh-Hoddinott normalized share method indicator
DD	Difference-in-Difference
DDD	Difference-in-Difference-in-Difference
DPT	Diphtheria, Pertussis, and Tetanus
DSW	Department of Social Welfare
GSFP	Ghana Schooling Feeding Program
IPW	Inverse Probability Weighting
ISSER	Institute of Statistical, Social, and Economic Research
LEAP	Livelihood Empowerment Against Poverty program
LPM	Linear Probability Model
MESW	Ministry of Employment and Social Welfare
NHIS	National Health Insurance Scheme
NSPS	National Social Protection Strategy
OVC	Orphan or vulnerable child
PSM	Propensity Score Matching
SHI	Social Health Insurance
SSA	Sub-Saharan African
UNC	University of North Carolina, at Chapel Hill
USD	US Dollar
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

1.1 Introduction

Poverty is one of the largest barriers to individual development and economic prosperity. Poverty has repeatedly been shown to negatively impact child survival and development. This relationship is especially prevalent in developing countries, where more than half a billion children live on less than 1 US Dollar (USD) per day (UNICEF, 2000). Childhood poverty has devastating long-term effects such as lower cognitive ability, lower academic achievement, and reduced future income potential (Aber, Bennett, Conley, & Li, 1997). Additionally, children living in poverty are more likely to perpetuate the poverty cycle through inter-generational effects of poverty (Adato & Bassett, 2009; Barrientos & DeJong, 2006). With the long-term negative effects of poverty, developing countries are beginning to invest in social programs to protect their children (Engle et al., 2007). UNICEF defines social protection as a "set of transfers and services that help individuals and households confront risk and adversity and ensure a minimum standard of dignity and well-being throughout the life cycle" (Handa, Devereux, & Webb, 2011). Social protection programs are relatively new in Africa. Interventions include social insurance; cash transfers and subsidies; and services such as maternal and child health programs. Previously, most of the investment in the region focused on improving coverage of services. However, barriers still existed for the poor to actually use these services. Social protection programs play a key role in overcoming these barriers through protecting consumption and ensuring social development of poor households (Handa, et al., 2011).

Cash transfer programs are a promising way to address poverty and child protection. Cash transfer programs represent a policy shift towards demand-focused interventions to

support the poor and vulnerable populations such as orphans and vulnerable children (Rawlings & Rubio, 2005). Cash transfer programs are rapidly spreading across the developing world as a powerful tool to mitigate the short-term impacts of poverty and to break the inter-generational transfer of human capital deficits.

There are two primary types of cash transfer programs: Conditional cash transfer (CCT) and unconditional cash transfer programs. CCT programs are primarily implemented in Latin America and the Caribbean. For CCT programs, households must meet certain criteria or behaviors, such as enrolling their children in school or vaccinating their children, in order to receive the cash transfer (World Bank, 2009). Typically, unconditional cash transfer programs do not have conditions for receipt of the transfers. For both CCT and unconditional programs, the cash is distributed in small amounts over time, with the cash operating as an income transfer. This approach allows the cash transfer programs to support long-term economic development by advancing household capital accumulation through supporting consumption in the short-term and allowing families to invest in the human capital of their children. Based on the results of the first generation of cash transfer programs in Latin America, more than 30 other developing countries have begun to implement similar cash transfer programs. In recent years, several African governments, including Ghana, have launched cash transfers programs targeting vulnerable groups. However, the lessons learned from the Latin America programs may not be transferable to the sub-Saharan African (SSA) context. As cash transfer programs in SSA are faced with higher poverty rates, lower institutional capacity and quality of services, and less access to health and social services, conditional cash transfers are more difficult to implement in Africa (Devereux, 2006). As a result, cash transfer programs in Africa are usually unconditional rather than conditional.

1.2 Background

1.2.1 The Ghana context

Ghana is located in Western Africa bordered by Cote d'Ivoire and Togo. In 1957, Ghana gained its independence from Britain and was the first country in sub-Saharan Africa to become free from colonial rule. There are 10 main regions in Ghana, which are divided into 170 administrative districts. The economy of Ghana is stable and has grown considerably in the past 25 years primarily due to government stability, reductions in poverty, and strong management of natural resources and agricultural industries (Central Intelligence Agency, 2011).

Despite improvements in poverty in the past ten years, Ghana remains one of the poorest countries in the world and was ranked 130 out of 169 countries in the 2010 Human Development Index (United Nations Development Fund, 2011). In 2011, the estimated population was more than 24.7 million with half of the population residing in rural areas (Central Intelligence Agency, 2011). An estimated 30 percent of the population in Ghana still lives below the international poverty line of 1.25 USD a day and is vulnerable to health and economic shocks (United Nations Development Fund, 2011).

The combined gross enrollment ratio in education for both girls and boys is 56.5 percent and mean years of schooling among adults 25 years and older is 7.1 years (United Nations Development Fund, 2011).

Although there have been decreases in child mortality rates since 1988, 50 children per 1,000 live births still die in their first year of life with 80 children per 1,000 live births dying before their fifth birthday. More disconcerting still is the fact that these deaths are higher among rural and poorer populations. Attributing to child mortality, malnutrition and diarrheal diseases are still among the leading causes of death among children under the age of five. In 2008, 28 percent of children under the age of five were stunted. Over 75 percent of children in Ghana are afflicted with anemia, with higher rates as maternal education and wealth decrease.

Additionally, more than 20 percent of children under the age of five had diarrhea, with children 12-23 months at highest risk with rates of 33 percent. Of these children with diarrhea, only 40 percent of children sought treatment at a health facility and 26 percent received no fluids at all (Ghana Statistical Service, Ghana Health Service, & ICF Macro, 2009). Although the HIV rate is below 2 percent, AIDS also impacts Ghanaian children. It is estimated that 1,100,000 Ghanaian children are orphans with 160,000 orphaned due to AIDS (UNICEF, 2011).

1.2.2 Livelihood Empowerment Against Poverty

The Livelihood Empowerment against Poverty (LEAP) Program is an unconditional cash transfer program that provides cash payments and health insurance to extremely poor households across Ghana to alleviate short-term poverty and to encourage long-term human capital development. LEAP started a trial phase in March 2008 and began expanding gradually in 2009 and 2010 and currently reaches approximately 35,000 households across Ghana with an annual expenditure of approximately 11 million USD. The program is fully funded from general revenues of the Government of Ghana, and is the flagship program of its National Social Protection Strategy. It is implemented by the Department of Social Welfare (DSW) in the Ministry of Employment and Social Welfare (MESW). Eligibility is based on households being classified as poor and having a household member in at least one of three demographic categories: single parent with orphan or vulnerable child (OVC), elderly poor, or person with extreme disability unable to work. Initial selection of households is done through a community-based process and is verified centrally with a proxy means test.

A feature of LEAP that makes it a unique program is that aside from direct cash payments, beneficiaries are provided free health insurance through the National Health Insurance Scheme (NHIS). Continued receipt of cash payments from LEAP is conditional on a health insurance card.

1.2.3 The National Health Insurance Scheme

In 2004, the Government of Ghana launched the NHIS. The mission of the NHIS is to provide universal access to health care without out-of-pocket payment at the point of service use (National Health Insurance Authority, 2011). The NHIS is open to all Ghanaian citizens and currently covers 66 percent of all households (National Health Insurance Authority, 2011). The NHIS is the first large-scale national scheme of its kind in SSA and as such serves as a model for the region. To include the informal workforce and vulnerable populations, the Government of Ghana has funded the NHIS through taxation to include coverage of the poor and vulnerable populations (Witter & Garshong, 2009).

Under the NHIS, the annual premium for each person is based on their ability to pay. District-level committees categorize residents into four wealth quartiles and adjust premiums accordingly. The four wealth quartiles consist of the: Core poor, poor, middle class, and rich/very rich. Premiums are subsidized for those over the age of 70 and the core poor. Based on the type of coverage, premiums range from 85 USD to 575 USD annually. All premiums provide coverage for children and dependents less than 18 years of age. Benefits include out-patient and in-patient services, dental services, and maternal health services (National Health Insurance Authority, 2011). This program is the first part of the Government of Ghana's plan to reduce poverty through the National Social Protection Strategy (Ablo, 2011). To date, there has only been one study that has evaluated the impact of NHIS on health. Mensah and colleagues found that women who participated in NHIS had an increased chance of having antenatal care and having a skilled attendant at birth (Mensah, Oppong, & Schmidt, 2009).

1.3 Previous literature

1.3.1 Impact of cash transfer on health

Studies examining the impact of CCT programs on health have been positive. In general, results from CCT programs in Latin America showed positive impacts of CCT on health outcomes. Some evidence from the first generation of cash transfer programs demonstrate that CCT programs have increased the use of health services and improved the health status of beneficiaries (Fiszbein & Schady, 2009; Paul Gertler, 2004; Lagarde, Haines, & Palmer, 2007). Several studies have demonstrated positive impacts of such programs on child nutrition (Behrman & Hoddinott, 2005), assisted delivery (Urquieta, Angeles, Mroz, Lamadrid-Figueroa, & Hernandez, 2009) and even adult physical health (Fernald, Hou, & Gertler, 2008). In Honduras and Colombia, researchers showed an increase in diphtheria, pertussis, and tetanus (DPT) vaccination among children participating in CCT programs but did not improve measles vaccination rates (Attanasio et al., 2006; Morris, Flores, Olinto, & Medina, 2004). Additionally, the study in Honduras showed an increase in health service use for pre-school children but no impact on antenatal care (Morris, et al., 2004).

Although cash transfers in SSA tend to be unconditional, their impacts on schooling are strong and equivalent to the conditional programs in Latin American and the Caribbean (Kenya CT-OVC Evaluation Team, 2012; Samson et al., 2010). On the other hand, their impacts on health outcomes are generally weak (Miller, Tsoka, & Reichert, 2008; Ward et al., 2010), suggesting that improvements in health care utilization and subsequent health outcomes may require more than simple increases in income in the SSA context.

1.3.2 Impact of cash transfer programs on education

The impact of cash transfer programs on education has been extensively studied for CCT programs in Latin America. Many CCT programs have been shown to have positive effects on school enrollment. In Mexico, Schultz demonstrated that the national CCT program, Progresa,

increased school enrollments, particularly at the post elementary level. However, Schultz found limited impacts on primary school enrollment which may be attributed to already high primary school enrollment rates (Schultz, 2004). Skoufias also showed that the Progresa increased primary school enrollments by 0.96 to 1.45 percentage points for girls and 0.74 to 1.07 percentage points for boys (Emmanuel Skoufias, 2001). Additionally, Skoufias found that Progresa increased secondary school enrollments by as much as 9.3 percentage points (Emmanuel Skoufias, 2001). The CCT program in Nicaragua also showed positive impacts on primary school enrollment with increases of over 21 percentage points (IFPRI, 2002).

There is a need to increase the evidence examining the impact of unconditional cash transfer programs on education. Two studies of unconditional cash transfer programs in Africa have shown that the impacts of unconditional cash transfer on schooling are strong and equivalent to the conditional programs in Latin America (Kenya CT-OVC Evaluation Team, 2012; Samson, et al., 2010). However, it is important to continue developing the evidence base on how unconditional cash transfers reduce the effects of poverty on children and improve human capital development.

1.4 Approach

1.4.1 Overview and rationale

The goal of this dissertation was to determine the impact of an unconditional cash transfer program on the health and education of poor households in Ghana. The specific aims of the study were addressed through the secondary analysis of de-identified data from the 2010 Yale Institute of Statistical, Social and Economic Research (ISSER) nationally representative household socioeconomic panel survey and the 2012 follow-up evaluation survey implemented by University of North Carolina at Chapel Hill (UNC), Carolina Population Center. All analyses were conducted with Stata 10, StataCorp 2007.

This dissertation supports a more complete understanding of social protection programs, such as cash transfers and national health insurance, on reducing the effects of poverty on children. The main objective of this research was to examine the impact of a cash transfer program on the health and education behavior of poor households in Ghana. The central hypothesis was that cash transfer would have a positive effect on health and education outcomes. This effect is due to the substitution and income effects induced by the cash transfer that will affect demand of health and education services. The hypothesis was evaluated in the context of three separate papers to be submitted to peer-reviewed journals. The titles for the proposed manuscripts including the specific aims for the proposed dissertation research were as follows:

Aim 1: Assessment of the targeting effectiveness of an unconditional cash transfer program in Ghana

Aim 1.1: Assess the efficiency of the targeting scheme in Ghana among the poor households.

Aim 2: The impact of cash transfers and health insurance on health care utilization in Ghana

Aim 2.1: Examine the impact of an unconditional cash transfer program and a national social insurance scheme in Ghana.

Aim 3: The impact of unconditional cash transfers on education: Experience from Ghana

Aim 3.1: Examine the impact of demand-side interventions on education outcomes in Ghana by evaluating the impact of an unconditional cash transfer program.

This dissertation addresses problems of high concern in combatting global poverty. It is expected that this research will provide clear and convincing evidence on the extent to which cash transfer programs and health insurance achieve child-sensitive social protection as well as other health outcomes. The findings will have great relevance for many developing countries around the world.

1.4.2 Conceptual model and theory

The LEAP Program provides cash transfer to households with a member in at least one of three demographic categories: single parent with OVC, elderly poor, or person with extreme disability unable to work. The cash transfers are expected to raise short-term household consumption in spending for food and clothing that directly and indirectly affect children's health, nutrition, and welfare. In the long-term, cash transfers will allow families to invest in the human capital of their children, household investment, and productivity. The conceptual model is presented in Figure 1.2 and outlines how the cash transfer will impact household activity and the causal pathways in which it acts.

This dissertation focused on the effect of the LEAP and NHIS program on children. In this analysis, a crucial assumption is that the impact of the program is dependent on household decisions on spending and time allocation. In this model, moderators and mediators are also presented. Moderator variables affect the direction of the relationship between an independent variable and a dependent variable. Mediator variables are variables that may explain the relation between the independent and dependent variables. A key difference between a moderator and mediator is that moderators are not influenced by the programs while mediators can be influenced by the program (Baron & Kenny, 1986).

The major moderating factors in this model between household and children include environmental factors, such as distance to schools or health facilities and household level characteristics, such as the literacy of the household head and mothers. Because enrollment in the LEAP Program is contingent in enrollment in the NHIS, it is expected that NHIS will act as a possible mediator. Enrollment in NHIS may induce potential behavior changes in health through mediating the effect of LEAP at the household level. To test the moderator relationship, potential moderator variable may be interacted with treatment variables and added to the

empirical models to see if there is a statistically significant amount of variance of criterion variable (Baron & Kenny, 1986).

1.4.3 Sample and data sources

Data for this study was obtained from two sources: 1) The 2010 ISSER nationally representative household socioeconomic panel survey and 2) The follow-up survey implemented by UNC. Baseline data was collected from future beneficiaries in three regions (Brong-Ahafo, Central and Volta) who were part of a larger nationally representative sample of households surveyed as part of a research study conducted by ISSER and Yale University during the first quarter of 2010 (N=699).

Subsequently, 699 households from the national ISSER survey were selected by Propensity Score Matching (PSM) using one-to-one nearest neighbor approach, to serve as a comparison group. The matched comparison group was drawn from the same three regions as the LEAP households as well as adjacent regions that were thought to contain households facing similar agro-ecological conditions as the intervention group.

This comparison group of "matched" households (N=699) was re-interviewed after 24 months along with LEAP beneficiaries to measure changes in outcomes across treatment and comparison group. During implementation of the follow-up survey, an additional 215 households were interviewed at follow-up from the ISSER sample. These households had similar propensity scores to the LEAP households resided in the same communities that were already being visited by the ISSER enumeration team and could be interviewed at low additional cost (Figure 1.3).

The follow-up survey used the same interviewers and questionnaire as the ISSER national socioeconomic survey. As a result, variable definitions and other measurement issues are consistent across the samples and survey waves. Through the construction of the matched comparison group, the comparison group can be followed over the same period of observation.

An extensive list of pre-program household variables was constructed and used to estimate the propensity score for all households. Decision rules were mimicked to replicate the selection process and used variables identical or similar to the ones used to select beneficiaries.

The survey instrument for both data sources included detailed consumption expenditures, child development measures such as the Raven's Matrices test (Carpenter, Just, & Shell, 1990), use of preventive and curative health services, out-of-pocket health expenditures, school enrollment and attendance, and household income. The community questionnaire compiled information from key informants on staff and supplies within schools and health centers, prices of main production and consumption items plus wage rates, and an inventory of economic and social shocks. Table 1.1 presents the topics of the household and community questionnaires.

1.5 Significance

This dissertation is significant in several important respects: 1) It evaluated the extent to which social protection programs ameliorate the effects of poverty for poor households, 2) It provided new research to assess cash transfer programs in sub-Saharan Africa, and 3) It represented an opportunity to evaluate the impact of the first large-scale national health scheme of its kind in SSA.

The dissertation serves as one of the first rigorous evaluations of a government-owned and implemented cash transfer program in Africa. Although studies have looked at the performance of grant programs in Africa, these evaluations were found to lack econometric rigor and were from small available non-representative samples (Adato & Bassett, 2009). Currently, the few rigorous evaluations are of conditional cash transfer programs in Africa. As the LEAP Program is an unconditional cash transfer program, this study added to the evidence base to help countries better understand the effectiveness of the two types of cash transfer programs implemented in the SSA context (Adato & Bassett, 2009). This study used a

comparison group constructed with PSM by which one can estimate causal evidence on the impact of cash transfer programs and health insurance on health inputs and outcomes in this context.

As countries are investing in cash transfer programs as a way to reduce poverty and to improve health and education outcomes, governments are searching for alternative strategies, such as micro-finance, community-based health insurance, public health insurance, and user fees to help households address health shocks. Ghana is the first country to combine a cash transfer program with national health insurance. With this groundbreaking combination of two social protection interventions for the poor, Ghana serves as a model of social policy innovation for developing countries. As coverage of LEAP and NHIS are still in the early phase, there is a unique opportunity to evaluate these two programs in Ghana. The study was among the first to compare outcomes among households who have received cash and subsidized health insurance with two comparison groups, one that has health insurance and one that does not. These results will help provide policy makers a better understanding of the mitigating effects of cash transfer programs and health insurance schemes on the health and social outcomes in the most vulnerable populations in Africa. At the regional level, evidence from this research will assist governments to improve delivery of the program at scale. Additionally, results of this study will be used to advocate for LEAP at the national level in future budget and policy discussions. As LEAP and NHIS serve as models of innovation for developing countries, this study can also be utilized to inform policy development and the development of similar programs in other sub-Saharan African countries.

1.6 Tables and Figures

Table 1.1: Topics in survey questionnaires

Household Survey	Community Survey
Household background	Water and sanitation
Employment	Transportation
Education	Land values
Migration	Crop prices
Household assets	Extension services
Agricultural production	Shocks and conflicts
Non-farm household enterprise	Employment and business
Household health	Social and political groups
Child health and development	Education staffing
Social networking	Health staffing
Household food security	Health services
Expenditure	Food prices
Housing characteristics	Non-food prices
	Land measures and transactions

Figure 1.1: Map of Ghana
Source: CIA Fact book

Figure 1.2: Conceptual framework

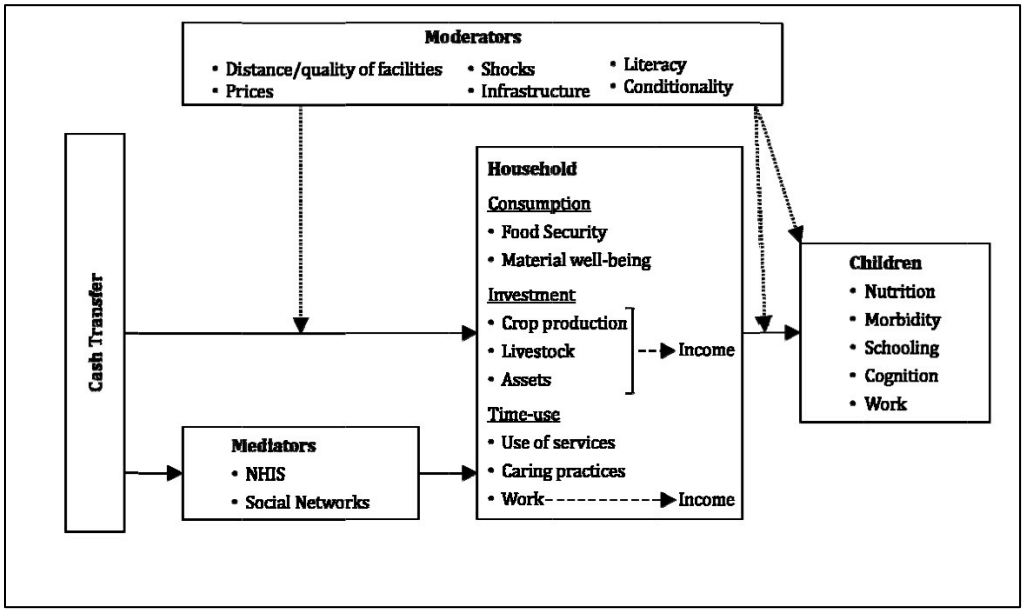
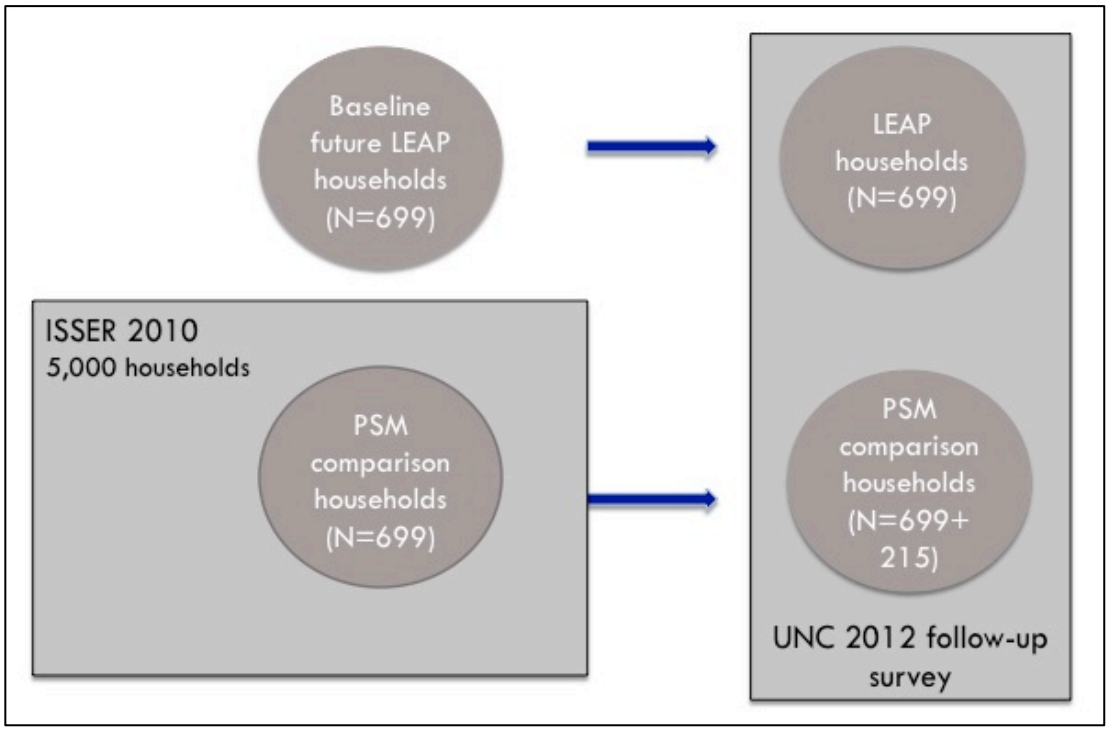


Figure 1.3: Data sources



CHAPTER 2: ASSESSMENT OF THE TARGETING EFFECTIVENESS OF AN UNCONDITIONAL CASH TRANSFER PROGRAM IN GHANA

2.1 Introduction

Cash transfer programs are a promising way to address poverty and child protection. Cash transfer programs represent a policy shift towards demand-focused interventions to support poor and vulnerable populations, such as orphans and vulnerable children (Rawlings & Rubio, 2005). Cash transfer programs are rapidly spreading across the developing world as a powerful tool to mitigate the short-term impacts of poverty and to break the inter-generational transfer of human capital deficits.

Two primary types of cash transfer programs exist: Conditional cash transfer (CCT) and unconditional cash transfer programs. CCT programs are implemented primarily in Latin America and the Caribbean. For CCT programs, households must meet certain criteria or behaviors, such as enrolling their children in school or vaccinating their children in order to receive the cash transfer (World Bank, 2009). Typically, unconditional cash transfer programs do not have any conditions for receipt of the transfers. For both CCT and unconditional programs, the cash is distributed in small amounts over time with the cash operating as an income transfer. This approach allows the cash transfer programs to support long-term economic development by advancing household capital accumulation through supporting consumption in the short-term and allowing families to invest in the human capital of their children. Based on the results of the first generation of cash transfer programs in Latin America, more than 30 other developing countries have begun to implement similar programs. In recent years, several African governments, including Ghana, have launched cash transfers programs

targeting vulnerable groups. However, the lessons learned from the Latin America programs may not be transferable to the sub-Saharan African (SSA) context. As cash transfer programs in SSA are faced with higher poverty rates, lower institutional capacity and quality of services, and less access to health and social services, conditional cash transfers are more difficult to implement in Africa (Devereux, 2006). As a result, cash transfer programs in Africa are usually unconditional rather than conditional.

With the increasing number of countries implementing cash transfer programs, governments and stakeholders are beginning to shift the policy discussion towards program implementation. Critical implementation issues include targeting of beneficiaries, transfer levels, and cost of programs. Important policy questions are how to scale-up programs, for which beneficiaries, and at what levels. In countries with limited resources, targeting strategies of social programs are crucial both to addressing sustainability and removing inequality of programs. Efficient targeting of programs can help maximize their impact on poverty by reaching the most vulnerable and poor households.

A variety of approaches are used to target program beneficiaries. All targeting approaches share the same goal to appropriately and efficiently identify poor households (David Coady, Margaret Grosh, & John Hoddinott, 2004a). Three primary approaches are used for targeting: (1) proxy means tests, (2) categorical, and (3) community-based. Proxy means tested targeting programs use an algorithm to produce a score based on household characteristics such as demographic characteristics that signifies household welfare (Coady, et al., 2004a). This approach involves the collection and verification of household information. As such, proxy means testing results in higher administrative costs and requires greater institutional (Coady, et al., 2004a; David Coady, M Grosh, & J Hoddinott, 2004b). With categorical targeting, all individuals within a geographic area or a certain group are eligible for program benefits (Coady, et al., 2004a; Coady, et al., 2004b). Common criteria for categorical

targeting also include, age, gender, and/or marital status of the household head. Community-based targeting utilizes community members or leaders to identify and to select eligible beneficiaries in the community. The rationale for community-based targeting is that community members or leaders have the best understanding of the households' living conditions and will more accurately target the poor households. Benefits of community-based targeting include decreased costs, community ownership, empowerment, and use of local knowledge and context (Alderman, 2002; Conning & Kevane, 2002; Handa et al., 2012). However, in certain cases such as in Ethiopia, community-based targeting has been shown to be susceptible to local corruption and power dynamics (Alderman, 2002). Elements of proxy means testing, community-based, and categorical targeting can be combined to create hybrid-targeting strategies.

Targeting strategies vary from region to region. In Latin America, cash transfer programs employ proxy means test targeting, whereas cash transfer programs in Africa usually use community-based targeting (Handa, et al., 2011). Reasons for the different approaches are related to cost and administrative capacity (World Bank, 2011a).

This paper examines the efficiency of the Livelihood Empowerment Against Poverty (LEAP) Program targeting scheme in Ghana. This paper will allow policy makers to better understand how the LEAP Program identifies poor households as well as vulnerable households. Results will support policy discussion on how to improve LEAP targeting performance and to aid in the design of similar programs elsewhere in Africa.

2.2 Targeting in the LEAP Program

In 2008, Ghana launched the pilot phase of the LEAP Program to assist the most vulnerable populations. LEAP is an unconditional cash transfer program that provides cash and health insurance to vulnerable households to mitigate short-term poverty and to stimulate long-term human capital development. Eligible households receive between 8-15 Ghana Cedis

per month depending on the number of beneficiaries[1]. LEAP began as a trial phase in March 2008 and expanded gradually in 2009 and 2010. The program currently reaches more than 35,000 households across Ghana.

LEAP Program targeting is a hybrid of categorical targeting, community-based targeting, and proxy means tests. First, community leaders select households that they believe are poor and have a household member in at least one of three demographic categories: (1) single parent with orphan or vulnerable child (OVC), (2) elderly poor, or (3) person with extreme disability unable to work. Poverty status is then confirmed by the Department of Social Welfare using proxy means tests to validate income. District level staff then uses the results to select beneficiaries.

2.3 Methods

2.3.1 Data

Data for this study was obtained from the 2010 Institute of Statistical, Social and Economic Research (ISSER) nationally representative household socioeconomic panel survey. The survey instruments include detailed consumption expenditures, child development measures such as the Raven's Matrices test (Carpenter, et al., 1990), use of preventive and curative health services, out-of-pocket health expenditures, school enrollment and attendance, and household income. The community questionnaire compiled information from key informants on staff within schools and health centers, prices of main production and consumption items as well as wage rates. The 2010 ISSER household survey consists of a

[1] Eligible households receive between GH¢ 8-15 per month: Households with one eligible beneficiary receive GH¢ 8; household with two eligible beneficiaries receive GH¢ 10; household with three eligible beneficiaries receive GH¢ 12; household with four eligible beneficiaries receive GH¢ 15; and household with more than four eligible beneficiaries receive GH¢ 15. Transfers as a percentage of household consumption is relatively low by international standards. In Ghana, the LEAP transfer level of about 7 percent of consumption was among the lowest when compared to other successful cash transfer programs where transfers were at least 20 percent of consumption Handa, S., Huang, C., Hypher, N., Texeria, C., Veras, F., & DAvis, B. (2012). Targeting effectiveness of social cash transfer programs in three Africa countries. *Journal of Development Effectiveness, 4*(1), 78-108.

random sample of 5,000 households drawn from enumeration areas using the national Ghana census sample frame. Of these 5,000 households, 3,136 households are rural households. In addition, 699 future LEAP households were randomly drawn from a separate sample of 13,500 future LEAP beneficiaries from non-ISSER communities in 2010 and were added to the data collection process for ISSER 2010. In total, the analytical sample for this paper consists of 699 future LEAP households and 3,136 rural households from the 2010 ISSER survey. As the LEAP households had not yet received transfers or been enrolled in the program, this dataset served as the baseline data for the LEAP evaluation.

2.3.2 Analysis of targeting performance

To determine the performance of LEAP targeting, this study used the methodology developed and used by Stewart and Handa (Kakwani, Soares, & Son, 2006; S Stewart & Handa, 2011). The approach involved comparing: (1) demographic characteristics, (2) the LEAP targeting scheme using the Coady-Grosh-Hoddinott normalized share method indicator (CGH), (3) poverty measures, and (4) expenditure distribution. The CGH indicator was developed by Coady and colleagues to determine the performance of targeting of social programs. The CGH indicator uses the proportion of total transfers within different deciles of per capita expenditures to determine the efficiency of targeting. Further details are presented below.

First, the analysis assessed whether the LEAP eligibility categories are appropriate by comparing the characteristics of the LEAP Program households with groups of households from the ISSER national survey. Secondly, this analysis compared the efficiency of alternative targeting schemes, using the normalized share indicator to assess how well the LEAP Program performs in directing benefits towards poor households. Poverty measures then were compared to determine how strong each eligibility criterion is in identifying potential eligible beneficiaries based on poverty. Finally, distribution of expenditures was examined to determine whether the LEAP groups are the poorest of the poor.

2.3.2.1 Demographic characteristics

Demographic characteristics of LEAP Program households were compared with households from the ISSER national survey to determine how characteristics of LEAP participants differ from the national sample and rural households. As poverty is also a targeting criterion of LEAP, we included the rural poor whose per-capita expenditures were below the lower poverty threshold of 36 Ghana Cedis per capita per month[2]. This analysis will provide a better understanding of how LEAP households compare to the national sample as well as to all rural households and to the rural poor.

To determine whether the LEAP eligibility categories are appropriate, we compared the demographic characteristics of LEAP households to subgroups of rural households from the ISSER national sample that represent the demographic categories targeted for LEAP eligibility: single parent with OVC, elderly poor, or person with extreme disability unable to work.

We also measured the level of inclusion of four other vulnerable groups that have been used for targeting in other programs. To further assess whether the LEAP targeting approach missed other vulnerable groups, comparisons of the current LEAP targeting scheme to alternative strategies using other vulnerable groups are made. We compared the LEAP sample with samples from each of the three LEAP-eligible groups as well as with alternative beneficiary targeting approaches. These alternative beneficiary targeting groups include: 1) labor constrained-households[3], 2) households with children under the age of five, 3) female-headed households, and 4) households where the head of the household is widowed. These comparisons help to understand whether the LEAP targeting categories identify the poorest and most vulnerable to poverty.

[2] The poverty line was developed by the Ghanaian Statistical Service and adjusted to 2010 figures.
[3] Households are considered labor-constrained when one household member between 18 to 64 years who is able to work must care for three or more dependents younger than 18, older than 64, or disabled (i.e. the dependency ratio is greater than three).

2.3.2.2 Normalized share method for targeting measurement

A number of different methods are used to assess how programs perform in directing benefits towards the poor (Coady, et al., 2004a; Coady, et al., 2004b; Ravallion, 2007). This paper employed the CGH indicator to determine the performance of LEAP targeting. The CGH indicator is calculated by dividing the actual outcome by the neutral targeting outcome wherein each decile accounts for 10 percent of total program participants or 10 percent of the total transfer budget. This neutral outcome (neutral targeting) represents a uniform transfer and is neither progressive nor regressive (Coady, et al., 2004a; Coady, et al., 2004b). For example, if households in the lower 20 percent of income distribution receive 30 percent of the total transfer budget, the indicator is calculated as 30/20=1.5. This calculation shows that the targeting scheme which targets the bottom 20 percent of the income distribution will result in these beneficiaries receiving 50 percent more than they would have received under uniform transfer targeting (Coady, et al., 2004b). Indicators with coefficients more than one signify progressive targeting, whereas values of less than one signify regressive targeting. The CGH indicator was calculated for LEAP using the national distribution of adult equivalent expenditure from the national ISSER sample. Adult equivalent expenditures were used to adjust household expenditure based on the age and household members. This approach accounted for economies of scale within the household to measure welfare at the household level (Haughton & Khandker, 2009). The CGH indicator also was used to identify leakage errors, a type of targeting error in which non-poor households receive benefits that they are not eligible for. These errors typically occur due to lack of information, poor targeting practices, and local political pressures (Coady, et al., 2004a).

2.3.2.3 Poverty measures

A criticism of the CGH method is that it does not distinguish how the transfers are distributed among the poor, the size of the transfer, or whether the transfers are reaching the

rural poor and vulnerable (Coady, et al., 2004a; Coady & Skoufias, 2004). To address this weakness, we compared baseline poverty measures between LEAP households and ISSER national survey households to determine how well the eligibility criteria identified potential eligible beneficiaries based on poverty. First, we examined the poverty measures of LEAP beneficiaries and compared them to the national sample, to rural households, and finally to the rural poor. Second, we made comparisons between LEAP households and rural households with the three LEAP eligibility categories as well as alternative targeting categories mentioned in demographic characteristics section.

This paper used the following poverty measures: head-count ratio, poverty gap index, and the squared poverty gap index. To calculate these measures, national poverty thresholds developed by the Ghanaian Statistical Service adjusted to 2010 figures were used. Poverty measures for this study include:

Head-count ratio (P_0)

The head-count ratio (P_0) is a measure of the prevalence of poverty that shows the proportion of the total population below the poverty threshold (Ravallion, 1992). It is estimated as:

$$P_0 = q/n \qquad (1)$$

Where: q= number of individuals living below the poverty threshold

n=total population

Poverty gap ratio (P_1)

As the head-count ratio does not capture how poor the individuals are, an alternative poverty measure is the poverty gap ratio. The poverty gap is defined as the average difference between each individual's consumption to the poverty line. The poverty gap ratio (P_1) is the ratio of the poverty gap to the poverty line where the larger ratio indicates greater vulnerability of the poor (Ravallion, 1992).

$$P_1 = \frac{1}{N}\sum_{i=1}^{q}\frac{(z-y_i)}{z} \qquad (2)$$

Where: q= number of individuals living below the poverty line

n=total population

z=poverty line

y_i=income of the poor household

Squared poverty gap (P_2)

One disadvantage of the poverty gap measure is that it does not capture changes in the severity of poverty. The squared poverty gap measure (P_2) estimates the severity of poverty through taking into account the poverty gap and the inequality among the poor and is estimated as the average of the squares of the poverty gaps relative to the poverty line (Ravallion, 1992).

$$P_2 = \frac{1}{N}\sum_{i=1}^{q}[\frac{(z-y_i)}{z}]^2 \qquad (3)$$

Where: q= number of individuals living below the poverty line

n=total population

z=poverty line

y_i=income of the poor household

2.3.2.4 Expenditure distribution

We also examined the distribution of expenditure by graphically comparing the distribution of household expenditure that is measured by adult equivalent expenditure. Initial descriptive comparisons used the distribution of adult equivalent expenditure for LEAP households, the national sample, and the rural sample. Additional descriptive comparisons included LEAP versus LEAP eligibility categories and alternative targeting categories. Examining the distribution of expenditure provides policy makers another method to determine whether the LEAP groups are the poorest of the poor. As the functional form of expenditure is unknown, we employed non-parametric density estimators to estimate the probability density function based inferences of the population from observations in the data (Salgado-Ugarte & Perez-Hernandez, 2003; Silverman, 1986). Kernel density estimators are a

non-parametric density estimator commonly used in poverty analysis and are used in this paper (Sala-i-Martin, 2002, 2006). The Kolmogorov-Smirnov test was used to test the distribution of household expenditures for equality of distribution.

2.4. Results

2.4.1 Demographic characteristics

To determine whether the eligibility criteria appropriately targeted the poorest and most vulnerable groups within the population, characteristics of the LEAP households were compared to the ISSER national sample, the rural sample, and the rural poor subgroup. The means were reported for each group and were calculated at the household level in Table 2.1. Large variability in household characteristics was observed between LEAP and the ISSER national sample. The breakdown by age showed that LEAP households are less likely to have children under the age of five, but they are more likely to be caring for children who have lost one or both parents. LEAP households also have a higher share of elderly and disabled members. Additionally, LEAP households were more labor-constrained as they also have fewer working age adults. Tabled 2.1 showed that the demographic profile of LEAP households was very different from the rural poor. Rural poor households have a higher number of children under the age of five, but the proportion of rural poor households with orphans was much lower than the proportion observed in LEAP households. Thus, it would appear that the targeting is successful using the current eligibility criteria (OVC, elderly, and disabled). If targeting were based solely on geographic regions (such as rural/urban), the program would miss households that are also vulnerable, such as households with children under the age of five.

In Ghana, previous research has shown that there is a higher incidence of poverty among female-headed households compared to male-headed households (Ghana Statistical Service, 2007). To better understand whether the LEAP groups are the poorest and most

vulnerable to poverty, Table 2.2 compared household head characteristics of LEAP households to the national sample, rural households, and rural poor households. This approach showed that LEAP households are more likely to be a female-headed household and that household heads are typically older with less schooling[4]. Additionally, there was a larger proportion of widowed households heads in the LEAP sample. This supported the conclusions that the LEAP targeting scheme is effectively targeting the most vulnerable populations among the poor.

Tables 2.3 and 2.4 compare characteristics of the eligibility criteria used in LEAP (OVC, disabled, and elderly) to sub-samples of other criteria used to identify vulnerable households. These comparisons help to understand whether the LEAP targeting categories identify the poorest and most vulnerable to poverty. The LEAP sample was compared with samples from each of the three LEAP-eligible groups as well as with alternative beneficiary targeting approaches. From these results in Tables 2.3 and 2.4, it is shown that the LEAP sample was not statistically different from labor-constrained, elderly, and disabled households in terms of demographic composition of households, in terms of household size and number of young adults, elderly, and children under the age of five. These tables showed that the LEAP targeting was successful in reaching targeted beneficiaries. However, LEAP households were different from rural households with OVC. LEAP households typically had fewer children under the age of five as well as fewer orphans. One reason that may explain these differences is that rural OVC households in this comparison were not restricted to the households living below the lower poverty line. We found that widowed households are another vulnerable group, due to the fact that they are more likely to be households headed by older women with less education. Although widowed households have fewer household members, these households also have a higher number of orphans and elderly living in these households that further supported the conclusion that these households are also very vulnerable.

[4] Schooling is a binary variable, where 1=head of household had some education and 0=head of household did not have any education.

2.4.2 Normalized share method for targeting measurement

In constructing the sample for the CGH method, households without expenditure data were dropped from the analysis. Table 2.5 shows the quintile distribution of households as defined by the quintile thresholds using the distribution of adult equivalent expenditure in the ISSER national sample. For households in the national sample, the threshold for the bottom quintile of expenditure was 37.40 Ghana Cedis and the threshold for the bottom 40 percent was 53.16 Ghana Cedis. Using these thresholds for the LEAP sample, 31 percent of the LEAP households are in the bottom quintile and 52 percent are in the bottom two quintiles. As the LEAP target populations are the households below the bottom 20 percent of all rural households, the CGH coefficient was calculated by taking the proportion of LEAP beneficiaries that fall in the lowest quintile divided by 20 percent. Using the nationally representative thresholds, the CGH coefficient was 1.29, which indicated that 29 percent more benefits go to the target group relative to neutral targeting. Although the number demonstrates that targeting was progressive, it was much lower than the median CGH coefficient of 1.80 for other cash transfer programs compiled by Coady et al. (Coady, et al., 2004b).

We also compared our results with findings from a recent study by Handa and colleagues that examined the targeting effectiveness of cash transfer programs in Malawi, Mozambique, and Kenya (Handa, Huang, et al., 2012). We used their results to compare the CGH coefficient of the LEAP Program. Comparisons of CGH coefficients are presented in Table 2.6. From these results, we find that the LEAP Program's score was lower than other cash transfer programs: Mozambique (3.67 CGH coefficient), Kenya (2.72 CGH coefficient), Mozambique (1.73 CGH coefficient) (Handa, Huang, et al., 2012). Although these results demonstrate that the LEAP Program was less progressive than the other programs, it is difficult to conclude whether the targeting scheme was less progressive or the lower CGH indicator is due to other factors such as

confusion about eligibility or poor understanding of targeting criteria by community selection committees (Coady, et al., 2004b; Handa, Huang, et al., 2012).

Households in the top two income quintiles (Quintile 4 and Quintile 5) were identified as being most likely to benefit from leakage errors of the LEAP Program. These households were more likely to be targeting errors as compared to households in the third income quintile which may be a result of data collection or community identification errors. Using the quintile distributions, 186 households from the LEAP sample were identified as non-poor households receiving LEAP benefits. Tables 2.7 and 2.8 compare the means of demographic household characteristics of the 186 leakage households with LEAP and households from Quintile 4 and Quintile 5 of the ISSER national and rural samples. These 186 households were much smaller and had fewer children, and orphans. Interestingly, they also had fewer working age adults and more elderly and disabled members than LEAP households. These households were also more likely to be female-headed with older household heads. The head of these households also had the lowest level of education. In comparing these households, it appeared that these leakage households were still more similar to the demographic profile of LEAP households than households from the national and rural samples. Unfortunately, this comparison does not shed any additional insights into reasons why these households were included in the LEAP Program.

2.4.3 Poverty measures

Table 2.9 presents the estimates of the three poverty measures for LEAP households, national sample, and rural households. Poverty measures were calculated using the Ghanaian lower poverty line of 36 Ghana Cedis per person per month. In Table 2.10, we found that LEAP households and the three LEAP-eligible groups were poorer than the overall national and the rural population in Ghana. Additionally, the LEAP households had higher poverty gap and squared poverty gap values. Table 2.10 presents the comparisons among the three LEAP eligibility categories (OVC, disabled, and elderly). Disabled and elderly households from rural

households had higher rates of poverty as compared to the other alternative targeting groups. However, rural households with OVC had lower rates of poverty than that other LEAP-eligible groups and alternative targeting groups, such as households that have children under the age of five. This observation may be due to targeting errors or to changes in household income over time.

As described earlier, the poverty gap signifies the distance of the population from the poverty line. As a poverty measure, the poverty gap is useful in quantifying the resources needed to bring the poor above the poverty line by demonstrating the amount needed to be transferred to the poor under perfect targeting (Haughton & Khandker, 2009). For example, a poverty gap of 0.10 would imply that perfectly targeted cash transfer amount of 10 percent of the poverty line would be needed to raise the poor out of poverty. For the LEAP households the monetary value of the poverty gap was 0.11, which represents the amount needed to bring the LEAP households up to the poverty line.

Among the three LEAP-eligible categories from the rural sample, disabled households had the largest poverty gap and would need a larger transfer for these households to reach the poverty line. When comparing the poverty gap to other alternative groups, the groups with the highest poverty gap were disabled, elderly, labor-constrained, and households with children under the age of five. For these households to rise above the poverty gap, they would need transfers that represent 7 to 11 percent of the lower poverty line.

As the LEAP Program targets the poor (bottom quintile), the squared poverty gap is the most relevant indicator as it shows whether the targeting strategy captures the most poor and vulnerable. Moreover, the squared poverty gap is useful in demonstrating the changes of distribution within the poor. The squared poverty gap measure captures the vulnerability among the poor by measuring the shortfall in income of poor people in respect to the poverty threshold (Haughton & Khandker, 2009). Results in Table 2.9 show that LEAP beneficiaries

were more vulnerable than ISSER national and ISSER rural samples based on the squared poverty gap estimates. When comparing the three LEAP-eligible categories with alternative targeting categories, disabled, elderly, labor-constrained, and households with children under the age of five also had the largest squared poverty gap values as presented in Table 2.10.

Table 2.9 also shows the median adult equivalent per capita expenditure for LEAP households and the national and rural samples. When comparing LEAP with the national and rural samples, the trends in per capita expenditure were as expected with the LEAP households having the lowest expenditure followed by the rural sample. LEAP households also had lower monthly per capita household expenditure than the rural poor households.

When comparing the LEAP-eligible categories to other alternative categories, disabled, elderly households, and labor-constrained households had the lowest per capita expenditure as shown in Table 2.10. Coincidentally, these households also had the largest number of elderly among the different groups of households. However, OVC households in the rural sample had higher expenditure levels than the current LEAP beneficiaries. Interestingly, OVC households had higher expenditure than households with children between 0-5 years of age. This finding may be due to the fact that OVC households are more likely to be smaller households with fewer children under the age of five and more elderly members.

Table 2.11 presents the distribution of the poor among the different targeting categories. Of the three LEAP-eligible categories, the elderly made up 31 percent of the rural poor whereas OVC and disabled households constituted 11 percent and one percent of the rural poor respectively. The largest group among the poor was households with children under the age of five, constituting 60 percent of rural poor households. Female-headed households were also more likely to be living under the lower poverty line, as 20 percent of the rural poor were female-headed households.

We also compared the distribution of the three LEAP-eligible categories among the poor LEAP households to the rural poor sample. These results are presented in Table 2.12. From this table, we find that LEAP Program is successfully targeting the poor households with OVC or elderly members, but the LEAP Program is missing some eligible poor households with disabled adults.

2.4.4 Distribution of expenditure

Graphically comparing the distribution of expenditures allows policy makers to determine whether the LEAP eligibility categories do, in fact, result in identification of the poorest of the poor. The Kolmogorov-Smirnov test was used to test the distribution of household expenditures for equality of distribution. All distributions except households with disabled members were found to not have the same distribution function as the LEAP households.

Figure 2.1 shows the distribution of adult equivalent expenditure for all LEAP beneficiaries and the national sample and rural household sample. Due to the high expenditures of the outliers, the top five percent of national households were dropped from these graphs. In Figure 2.1, the distribution of national sample and rural households were slightly to the left of the distribution of the LEAP households that indicated that the LEAP beneficiaries are poorer than these two samples. As expected, the rural distribution was to the left of the national distribution which was consistent with rural households being typically poorer than urban counterparts. Additionally, the threshold of LEAP households living below the poverty line represented by the vertical line estimated at 36 Ghana Cedis was significant in showing that LEAP households are poorer than the national and rural samples. From the shape of the different distributions, it appeared that LEAP households have the least variation in expenditure.

The distribution of adult equivalent expenditure for LEAP beneficiaries and rural households from the three LEAP eligibility categories are presented in Figure 2.2. Again, the LEAP distribution indicated that the LEAP beneficiaries were poorer than the rural households from the three eligibility categories. Of the four groups of households, LEAP households had the lowest mean expenditure with disabled households having the highest level of mean expenditure. From the graph, it was also apparent that a larger proportion of LEAP households were below the poverty line.

Figure 2.3 compares the distribution of LEAP beneficiaries to other vulnerable groups. These include: 1) labor-constrained-households, 2) households with children under the age of five, 3) female-headed households, and 4) households where the head of the household is widowed. The distribution of expenditures among these households appeared to be about the same as that of the LEAP target population, presented in Figure 2.3. However, Figure 2.3 shows that households with children under the age of five were slightly poorer than LEAP beneficiaries. These figures indicated that the LEAP population was much poorer than average rural households and that the actual LEAP targeting scheme was selecting needy households. These results also supported previous analyses that LEAP households are poorer than rural households from the national sample and among the rural households below the lower poverty line. Additionally, it appeared that LEAP eligibility criteria will select the most poor and also most vulnerable.

Figure 2.4 compares the distributions of expenditure for LEAP, rural OVC, and rural households with children under the age of five. This graph showed that the rural poor households with children under the age of five had lower expenditure and more households below the poverty line. However, the variance in expenditure in OVC households was much larger, which may contribute to the higher expenditure levels in these households.

2.5 Conclusion and policy implications

Numerous targeting schemes are used in social protection programs in developing countries. As targeting schemes are highly reliant on financial resources and administrative capacity, this paper does not assess whether other targeting schemes are more effective. This paper presented quantitative evidence on targeting performance of the LEAP Program in Ghana that uses a hybrid-targeting scheme combining categorical targeting, community-based targeting, and proxy means tests to select participants. Based on these results, it appears that the LEAP targeting scheme was successful using the current eligibility criteria, and that the hybrid targeting used in the LEAP targeting scheme was effective in reaching the poorest and most vulnerable households in Ghana.

We compared the demographic characteristics and poverty measures of the LEAP sample to national and rural subsamples to determine whether the LEAP eligibility criteria appropriately targeted the poorest and most vulnerable groups. As the LEAP sample used in this analysis was randomly selected from the pool of future LEAP beneficiaries in Ghana, we assumed that the characteristics of the LEAP sample were representative of LEAP households in Ghana.

Comparisons of poverty measures and expenditure distributions demonstrated that LEAP households were poorer than rural households from the national sample and among the rural households below the lower poverty line. When we compared the poverty measures of LEAP households to LEAP-eligible categories and alternative targeting categories, we found that rural households with children under the age of five are also one of the poorest population subgroups evidenced by poverty measures. Similar results were found when examining the graphical distributions of expenditure. When we examined the proportion of the poor by subgroups, we found that a higher proportion of the rural poor (60 percent) have children under the age of five. When we examined the three LEAP-eligible categories, only one percent of

poor households has a disabled adult, 11 percent are OVC, and 31 percent has a member older than 64. Despite the fact that LEAP households were poorer than the national and rural samples, households with OVC, elderly, and disabled share a lower burden of poverty. If the LEAP targeting scheme utilized only a proxy means test, many of the current LEAP households would not be eligible for the program. However, our results showed that LEAP households were poorer across all poverty measures. This finding supports the strength of the hybrid targeting method and the importance of the community-based targeting in identifying the actual poor households in the communities.

When we compared the LEAP households to the rural households, we found that LEAP households have unique characteristics that are different from other rural households. LEAP households had a higher proportion of female-headed and widowed-headed households as well as households with caring for an orphan and/or disabled members. These households may be more vulnerable to economic shocks and stress as these types of households were more labor-constrained and had higher dependency ratios. Although LEAP targets poverty, the comparisons suggested that the eligibility criteria may select a very different group of beneficiaries than the average rural poor household and targets the most vulnerable populations among the poor. This finding supports the importance of the community-based targeting component of the LEAP targeting scheme in identifying the most vulnerable in the community.

Based on the demographic and poverty comparisons, we have shown that LEAP beneficiaries were likely the most vulnerable and poor in Ghana. However, it is also useful to assess the actual targeting performance of the program. We achieved this by using the CGH method to examine whether the targeting was progressive or regressive, as well as to identify leakage errors. Using the CGH method, the LEAP Program was found to be relatively progressive although it is much less progressive than cash transfer programs of other countries

in sub-Saharan Africa. Additionally, more than 25 percent of the LEAP participant households were identified as being non-poor and therefore representing leakage from the program. This was most likely attributed to poor targeting practices and local political pressures related to community-based targeting. Although, the "leakage" households were not the poorest, these households may still be the most vulnerable in the communities as they were more likely to be female-headed households, older household heads and have household heads with lower levels of education. This finding points to the strength of the community-based targeting and proxy means tests hybrid targeting system. If the LEAP targeting only used proxy means tests, these households may not have been identified as potential LEAP beneficiaries based solely on expenditures.

In terms of child welfare, the LEAP Program was not as successful as other unconditional cash transfer programs in sub-Saharan Africa. Although one of the LEAP Program eligibility categories was OVC, it is difficult to conclude that the LEAP was also a child welfare program. Of LEAP households, 62 percent has children under 17, of which 27 percent were households with orphans. In Zambia and Malawi, the majority of beneficiaries are OVC (56 percent and 69 percent of beneficiaries are OVC, respectively) (UNICEF, 2007b). Based on the results of the different comparisons, we identified households with children under the age of five as potential future LEAP targeted beneficiaries. As these households were the poorest of the poor as well as vulnerable, the inclusion of these households into the program will greatly increase the programs impact on improving child welfare for the poor in Ghana. However, future research such as micro-simulations should be explored to examine if it is feasible to include these households as future beneficiaries considering administrative and budget constraints.

2.6 Tables and Figures

Table 2.1: Demographic characteristics of sample populations

Characteristics	LEAP	ISSER*	ISSER rural**	Rural Poor**
Household size	3.83	3.77	**4.12**	**5.97**
Children under 5	0.44	**0.61**	**0.73**	**1.12**
Children 6-12	0.77	0.72	0.84	**1.48**
Children 13-17	0.54	**0.43**	**0.47**	**0.77**
Young adults 18-24	0.36	0.38	0.36	**0.46**
Adults 25-64	0.91	**1.37**	**1.42**	**1.76**
Elderly (>64)	0.76	**0.27**	**0.31**	**0.38**
Number of orphans in household	0.62	**0.14**	**0.15**	**0.17**
Household has an orphan (1/0)	0.27	**0.08**	**0.09**	**0.09**
Household has a disabled member (1/0)	0.06	**0.01**	**0.01**	**0.01**
NHIS (1/0=enrolled in NHIS)	0.64	**0.60**	**0.56**	**0.60**
N (households)	699	4999	3136	524

-Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-NHIS represents households that are enrolled in NHIS (1=enrolled 0=not enrolled)
*ISSER represent all households from the national 2010 ISSER survey.
**ISSER rural represents the sample of rural households from the national 2010 ISSER survey.
***Rural poor is the sample of ISSER rural households with expenditures below the lower poverty line.

Table 2.2: Household head's characteristics by sample population

Characteristics	LEAP	ISSER*	ISSER rural**	Rural poor***
Female head (1/0)	0.59	**0.32**	**0.28**	**0.19**
Age of head (in years)	60.92	**48.12**	**49.12**	**51.64**
Widowed (1/0)	0.39	**0.13**	**0.13**	**0.10**
Never married (1/0)	0.20	0.21	**0.17**	**0.11**
Head schooling (1/0)	0.30	**0.66**	**0.57**	**0.41**
N (households)	699	4999	3136	524

Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
*ISSER represent all households from the national 2010 ISSER survey.
**ISSER rural represents the sample of rural households from the national 2010 ISSER survey.
***Rural poor is the sample of ISSER rural households with expenditures below the lower poverty line.

Table 2.3: Demographic characteristics: Comparing LEAP to ISSER rural subgroups

Characteristics	LEAP	OVC	Disabled	Elderly	FHH	Widow	Kids 0-5	Labor-constrained
Household size	3.83	4.04	4.15	3.95	**2.96**	**2.55**	**5.74**	4.45
Children under 5	0.44	**0.53**	0.32	0.39	0.42	**0.24**	**1.60**	0.80
Children 6-12	0.77	0.91	0.74	0.71	**0.42**	**0.48**	**1.21**	1.28
Children 13-17	0.54	**0.68**	0.74	0.49	**0.64**	**0.36**	0.54	0.70
Young adults 18-24	0.36	0.41	0.16	0.37	0.30	**0.23**	0.40	0.14
Adults 25-64	0.91	**1.25**	1.05	**0.80**	**0.83**	**0.62**	**1.82**	**1.00**
Elderly (>64)	0.76	**0.26**	**1.15**	1.20	**0.35**	**0.62**	**0.17**	**0.54**
Number of orphans in household	0.62	**1.11**	**0.05**	**0.15**	**0.31**	0.50	**0.17**	**0.28**
Household has orphan	0.27	**0.64**	**0.05**	**0.09**	**0.16**	0.27	**0.09**	**0.28**
Household has disabled member	0.06	**0.01**	**1.00**	**0.02**	**0.01**	**0.01**	**0.01**	**0.13**
NHIS	0.64	**0.60**	0.68	0.67	0.62	0.64	**0.57**	0.63
N (households)	699	428	19	805	892	396	1430	357

-Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-FHH represents female-headed households.
-NHIS represents households that are enrolled in NHIS (1=enrolled 0=not enrolled)
-OVC, disabled, elderly, FHH, Widow, Kids 0-5, labor-constrained households are drawn from the ISSER rural sample.

Table 2.4: Household head's characteristics: Comparing LEAP to ISSER rural subgroups

Characteristics	LEAP	OVC	Disabled	Elderly	FHH	Widow	Kids 0-5	Labor-constrained
Female head	0.59	**0.42**	**0.21**	**0.38**	**1.00**	**0.88**	**0.19**	**0.19**
Age of head (years)	60.92	**47.40**	62.84	**69.47**	**53.25**	**65.86**	**42.82**	**51.64**
Widowed	0.39	**0.26**	**0.11**	**0.30**	0.39	**1.00**	**0.05**	**0.10**
Never married	0.20	0.21	0.21	**0.12**	**0.32**	**0.00**	**0.06**	0.10
Head schooling	0.30	**0.60**	**0.53**	0.33	**0.49**	0.31	**0.56**	**0.41**
N (households)	699	428	19	805	892	396	1430	357

- Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-FHH represents female-headed households.
-OVC, disables, elderly, FHH, Widow, Kids 0-5, labor-constrained households are drawn from the ISSER rural sample.

Table 2.5: Comparing the distribution of monthly expenditure in terms of adult equivalent expenditure for the ISSER national households and LEAP households.

Quintile distribution	**ISSER ***	**LEAP**
Quintile 1	20.03	31.29
Quintile 2	20.00	20.51
Quintile 3	20.00	20.36
Quintile 4	19.99	17.81
Quintile 5	19.99	10.03
N	4950	668

*ISSER represent all households from the national 2010 ISSER survey.

Table2.6: Comparing the CGH indicator to assess targeting performance

	Cash transfer programs (CGH)
Coady et al. (2004)*	1.80
Handa et al. (2012)*	
Malawi	3.67
Kenya	2.72
Mozambique	1.73
LEAP	1.29

Note: A CFH score of 1 indicates neutral targeting.
Indicators with values more than one signify progressive targeting, whereas values less than one signify regressive targeting.
*For the Coady and Handa estimations of the CGH indicator, per capita expenditure was used in their calculations.

Table 2.7: Demographic characteristics: Comparing LEAP, ISSER rural subgroups with non-poor LEAP households (LEAP Leakage)

Characteristics	LEAP	ISSER*	ISSER rural**	LEAP Leakage***
Household size	3.83	**3.07**	**5.97**	**2.66**
Children under 5	0.44	**0.48**	**1.12**	**0.21**
Children 6-12	0.77	0.52	**1.48**	**0.43**
Children 13-17	0.54	**0.28**	**0.77**	**0.25**
Young adults 18-24	0.36	0.29	**0.46**	**0.24**
Adults 25-64	0.91	**1.21**	**1.76**	**0.70**
Elderly (>64)	0.76	**0.28**	**0.38**	**0.80**
Number of orphans in household	0.62	**0.11**	**0.17**	**0.33**
Household has orphan	0.27	**0.07**	**0.09**	**0.17**
Household has disabled member	0.06	**0.01**	**0.01**	**0.08**
NHIS	0.64	**0.57**	**0.60**	**0.66**
N (households)	699	1677	1677	186

Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
*ISSER represent all households from the national 2010 ISSER survey.
**ISSER rural represents the sample of rural households from the national 2010 ISSER survey.
***LEAP Leakage identifies LEAP households in the highest two quintiles of adult equivalent expenditures (quintile 4 and quintile 5) and are most likely targeting errors. In this case, they are non-poor households that are receiving the LEAP Program.

Table 2.8: Household head characteristics: Comparing LEAP, ISSER rural subgroups with non-poor LEAP households (LEAP Leakage)

Characteristics	LEAP	ISSER *	ISSER rural**	LEAP Leakage***
Female head	0.59	**0.33**	**0.33**	**0.65**
Age of head (year)	60.92	**48.29**	**48.29**	**63.70**
Widowed	0.39	**0.15**	**0.15**	**0.43**
Never married	0.20	**0.22**	**0.22**	0.22
Head schooling	0.30	**0.66**	**0.66**	**0.30**
N (households)	699	3136	524	186

Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
*ISSER represent all households from the national 2010 ISSER survey.
**ISSER rural represents the sample of rural households from the national 2010 ISSER survey.
***LEAP Leakage identifies households in the highest two quintiles of adult equivalent expenditures and are most likely targeting errors. In this case, non-poor households that are receiving the LEAP Program.

Table 2.9: Poverty measures for ISSER national sample, rural sample, and LEAP households

Poverty Measure	LEAP	ISSER*	ISSER Rural***
Head-Count	0.38	**0.19**	**0.24**
Poverty Gap	0.11	**0.05**	**0.06**
Squared Poverty Gap	0.05	**0.02**	**0.02**
Expenditure	54.04	**85.33**	**70.47**
N***	668	4950	3128

- Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
*ISSER represent all households from the national 2010 ISSER survey.
**ISSER rural represents the sample of rural households from the national 2010 ISSER survey.
***Households with missing or zero food expenditure were dropped from the poverty measure calculations.

Table 2.10: Poverty measures: Comparing LEAP to ISSER rural subgroups

Poverty Measure	LEAP	OVC	Dis	Elderly	FHH	Widow	Kids 0-5	Labor-constrained
Head-Count	0.38	**0.20**	**0.42**	**0.29**	**0.18**	**0.23**	**0.28**	**0.29**
Poverty Gap	0.11	**0.05**	**0.11**	**0.08**	**0.05**	**0.05**	**0.07**	**0.09**
Squared Poverty Gap	0.05	**0.02**	0.04	**0.03**	**0.02**	**0.02**	**0.03**	**0.04**
Expenditure	54.04	**76.00**	61.52	63.77	**80.49**	**81.89**	**60.32**	**64.93**
N	668	427	19	803	890	395	1428	356

- Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-Dis represents disabled households (Dis).
-FHH represents female-headed households.
-OVC, disabled, elderly, FHH, Widow, Kids 0-5, labor-constrained households are drawn from the ISSER rural sample.
-Households with missing or zero food expenditure were dropped from the poverty measure calculations.

Table 2.11: Proportion of the poor across the ISSER rural subgroups

	OVC	Disabled	Elderly	FHH	Widow	Kids 0-5	Labor-constrained
Proportion among the poor	0.11	0.10	0.31	0.20	0.10	0.60	0.13

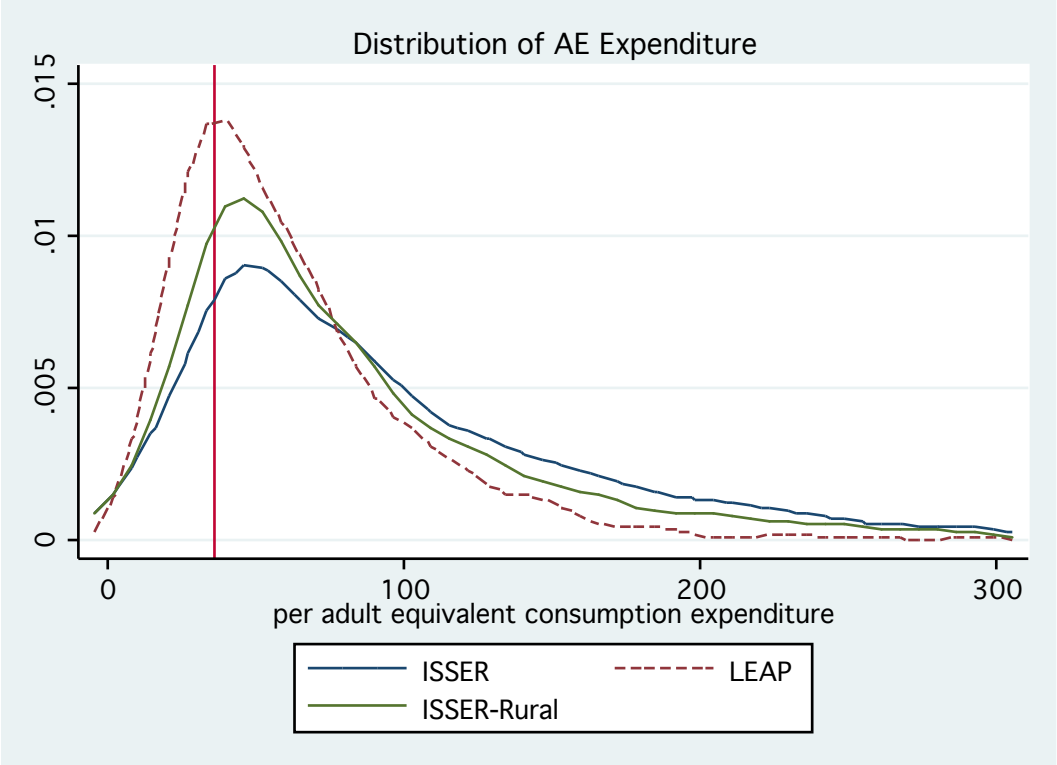
-FHH represents female-headed households.
-OVC, disables, elderly, FHH, Widow, Kids 0-5, labor-constrained households are drawn from the ISSER rural sample.
-Percentages do not add up to 100 percent as they may have overlapping categories.

Table 2.12: Proportion of the poor across LEAP and ISSER rural subgroups

	LEAP			ISSER subgroups		
	OVC	Disabled	Elderly	OVC	Disabled	Elderly
Proportion among the poor	0.35	0.05	0.66	0.11	0.10	0.31

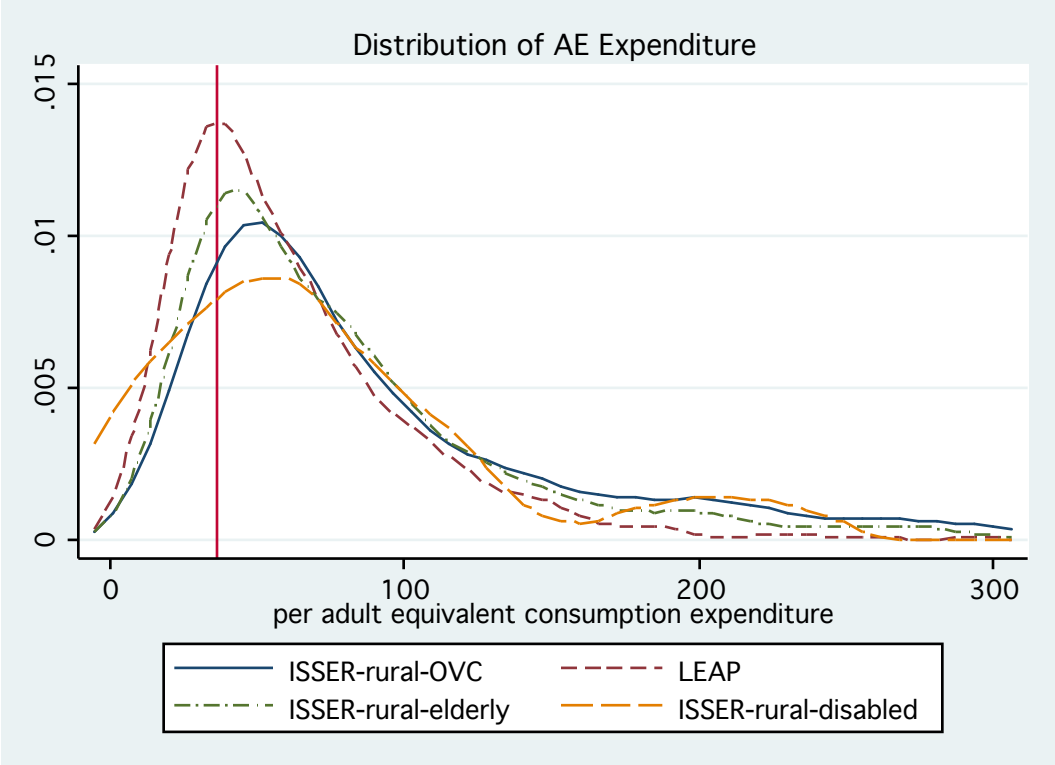
-FHH represents female-headed households.
-OVC, disables, elderly, FHH, Widow, Kids 0-5, labor-constrained households are drawn from the ISSER rural sample.
-Percentages do not add up to 100 percent as they may have overlapping categories.

Figure 2.1: Distribution of adult equivalent (AE) expenditure for LEAP households and national and rural samples



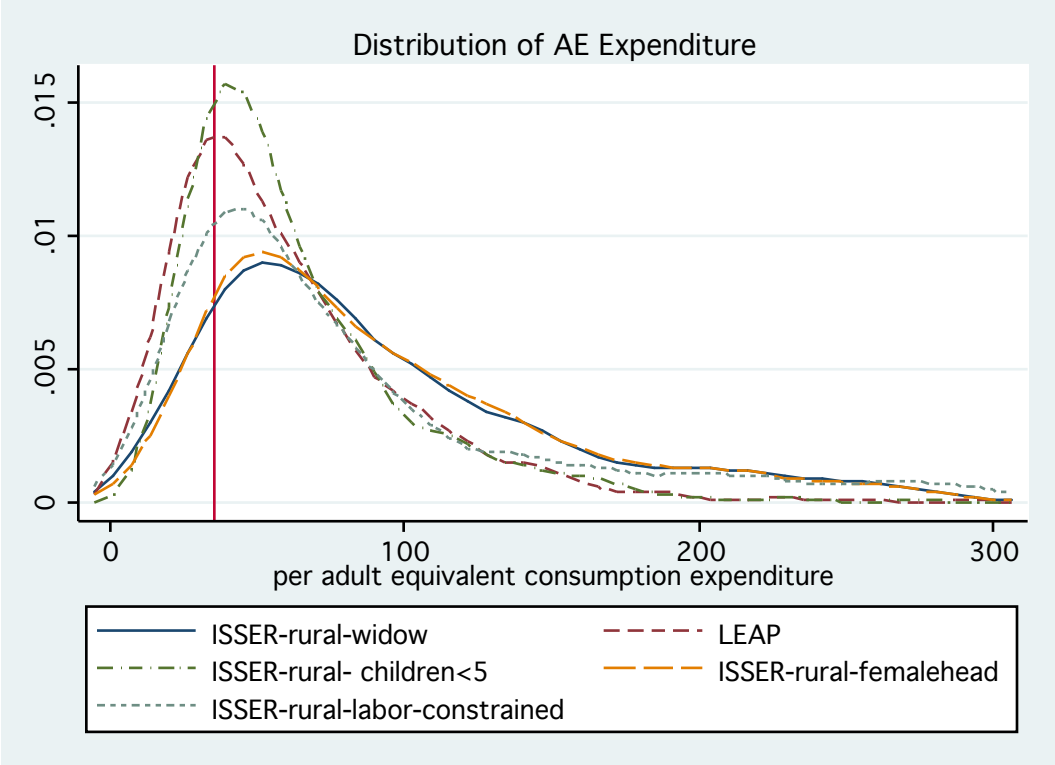
Notes:
-ISSER represents all households from the national 2010 ISSER survey.
-ISSER rural represents the sample of rural households from the national 2010 ISSER survey.
-The vertical line represents the lower poverty line.
- Due to the high expenditures of the outliers, the top five percent of national households were dropped from these graphs.

Figure 2.2: Distribution of AE expenditure for LEAP households and LEAP eligibility categories



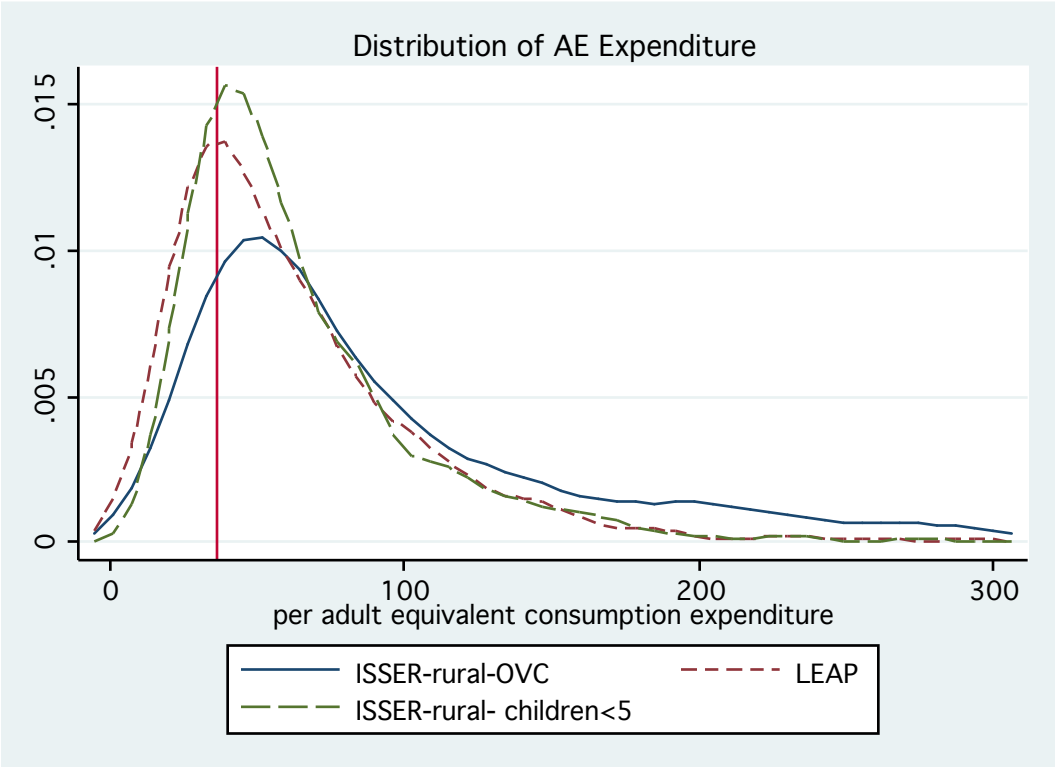
Notes:
-ISSER rural-OVC represents households from the ISSER rural households with OVC member.
-ISSER rural-elderly represents households from the ISSER rural households with elderly member.
-ISSER rural-disabled represents households from the ISSER rural households with disabled member.
- The vertical line represents the lower poverty line.

Figure 2.3: Distribution of AE expenditure for LEAP households and alternative targeting categories from ISSER rural sample



Notes:
-ISSER rural-OVC represents households from the ISSER rural households with a widowed head of household.
-ISSER rural-elderly represents households from the ISSER rural households with elderly member.
-ISSER rural-children<5 represents households from the ISSER rural households with children under age five.
-ISSER rural-disabled represents households from the ISSER rural households that are labor constrained.
-ISSER rural-female head represents households from the ISSER rural households with female head of household.
-The vertical line represents the lower poverty line.

Figure 2.4: Distribution of AE expenditure for LEAP and OVC and subgroups from ISSER rural sample



Notes:
-ISSER rural-OVC represents households from the ISSER rural households with a widowed head of household.
-ISSER rural-children<5 represents households from the ISSER rural households with children under age five.
-The vertical line represents the lower poverty line.

CHAPTER 3: THE IMPACT OF AN UNCONDITIONAL CASH TRANSFER PROGRAM AND NATIONAL HEALTH INSURANCE SCHEME ON HEALTH OUTCOMES IN GHANA

3.1 Introduction

3.1.1 Cash transfer programs

Cash transfer programs are rapidly being adopted in the developing world as a potential tool to mitigate the short-term impacts of poverty and to break the inter-generational transfer of human capital deficits. Cash transfer programs seek to support long-term economic development by advancing household capital accumulation through supporting consumption in the short-term and allowing families to invest in the human capital of their children.

Conditional cash transfer (CCT) programs are primarily implemented in Latin America and the Caribbean and condition receipt of benefits on children's school attendance, preventive health care use, vaccination uptake, and occasionally on health status (World Bank, 2009). Cash transfers have been shown to impact health status through helping households cover costs for obtaining care, increasing the nutritional intake and quality of food consumed, and motivating families to use preventive health services as a result of conditionalities (Adato & Bassett, 2009).

Studies examining the impact of CCT programs on health outcomes have been positive. In general, results from CCT programs in Latin America showed positive impacts of CCT on health outcomes. Some evidence from the first generation of cash transfer programs demonstrate that CCT programs have increased the use of health services and improved the health status of beneficiaries (Fiszbein & Schady, 2009; Paul Gertler, 2004; Lagarde, et al., 2007). Several studies have demonstrated positive impacts of such programs on child nutrition (Behrman & Hoddinott, 2005), assisted delivery (Urquieta, et al., 2009) and even adult physical

health (Fernald, et al., 2008). In Honduras and Colombia, researchers showed an increase in diphtheria, pertussis, and tetanus (DPT) vaccination among children in households participating in CCT programs but not improvement in measles vaccination rates (Attanasio, et al., 2006; Morris, et al., 2004). Additionally, the study in Honduras showed an increase in health service use for pre-school children but no impact on antenatal care (Morris, et al., 2004).

The lessons learned from the Latin America programs may not be transferable to the sub-Saharan African (SSA) context. For one, cash transfer programs in SSA tend to be unconditional. Countries in SSA are faced with higher poverty rates, lower institutional capacity, and less access to health and social services making conditional cash transfers more difficult to implement in Africa (Devereux, 2006). Despite these obstacles, unconditional cash transfer impacts on schooling are strong and equivalent to the conditional programs in Latin America and the Caribbean (Kenya CT-OVC Evaluation Team, 2012; Samson, et al., 2010). On the other hand, their impacts on health outcomes are generally weak (Miller, et al., 2008; Ward, et al., 2010), suggesting that improvements in health care utilization and subsequent health outcomes may require more than simple increases in income in the SSA context.

3.1.2 Health insurance

The impact of health insurance on out-of-pocket payments, health care utilization, financial well-being, and health outcomes has been demonstrated through several studies conducted primarily in the industrialized countries such as the United States (Finkelstein et al., 2012; Willard G. Manning, Leibowitz, Goldberg, Rogers, & Newhouse, 1984; W G Manning et al., 1987). The Rand Health Insurance Experiment, a long-term experimental study, examined the effect of health insurance on health care utilization. Results from this study found the type of insurance and cost sharing affected the use of services. Insurance schemes with increased cost sharing led to decreased use of services and reduced health care spending. Furthermore, the reduced cost sharing did not impact the quality of health care services received or overall

health outcomes for healthy individuals (Manning et al. 1987; Manning et al. 1984). A recent study in Oregon found that expanding access to public health insurance to low-income, uninsured adults increased use of primary and preventive care and decreased out-of-pocket expenditures. Individuals with insurance also reported better physical and mental health than comparison groups (Finkelstein et al. 2012).

Recent research also examined the impacts of health insurance on families. A report by the Institute of Medicine found that there were serious negative economic impacts for families with any uninsured family member. The report concluded that children without insurance have decreased access to health services and use less health care services than children with insurance. Additionally, uninsured children were less likely to use preventive services (Institute of Medicine 2002).

As the cost of care is an important determinant of health care utilization, health insurance is especially important in developing countries where out-of-pocket expenditures account for 25-60 percent of health care spending (World Health Organization 2010). Although several studies have examined the effects of health insurance in developing countries, few have used experimental or quasi-experimental research designs. Moreover, large-scale health insurance schemes in developing countries are not very common. In a recent systematic review of the literature, the majority of studies examining the impact of health insurance in developing countries focused on community-based health insurance. Only a few studies examined social health insurance (SHI) or private insurance in developing countries (Spaan et al. 2012). These studies find that SHI and community-based health insurance reduce out-of-pocket payments and improve access to health services. Other studies also find similar results supporting the relationship of health insurance with health care use and out-of-pocket expenditures. In Peru, demand for health services was found to be more elastic for individuals with lower income, implying that user fees are regressive and reduced access to care disproportionately for the

poor (P Gertler, Locay, & Sanderson, 1987). Researchers also have explored the relationship between insurance status and health status. Trujillo showed that individuals receiving social health insurance had better self-reported health status than those individuals not participating in the insurance scheme. Additionally, this study showed that social health insurance increases the use of preventive and curative care (Trujillo, 2003). Overall, the general consensus in the literature in developing countries is that health insurance and the type of health insurance is linked to the use of healthcare services and can lead to improved health outcomes.

Recently there has been renewed interest in SHI as a means to provide health care services at an affordable cost. The World Health Organization (WHO) recommends SHI as a strategy to mobilize resources for health and to achieve universal health coverage (World Health Organization, 2005). The distinctive characteristics of SHI are that membership is mandatory and funding is through employees, employers, and the government. As a result, the risk is pooled across populations. This feature of SHI decreases the dependency on public sector financing of the health system and shares the responsibility with the private sector and individual households through low premiums which allow households to afford them (World Health Organization, 2005). Consequently, this feature has made SHI more attractive in the developing country context. Although a number of the richer Southern African countries have a form of social security, very few countries have yet to implement SHI as they require strong government capacity and support. To date Nigeria, Rwanda, Kenya, Tanzania, and Ghana have passed laws supporting SHI in SSA. In contrast, more than 16 countries currently have large scale national cash transfer programs (Davis, Gaarder, Handa, & Yablonski, 2012).

This paper examined the impact of an unconditional cash transfer program and a national social insurance scheme in Ghana. The analysis used a longitudinal, propensity score matching design with data collected at baseline and 24 months after Livelihood Empowerment against Poverty (LEAP) Program initiation. Our key empirical challenge was disentangling the

effects of cash transfers from those of health insurance since LEAP beneficiaries were entitled to receive both benefits.

3.2 Cash transfer and health insurance schemes in Ghana

3.2.1 Livelihood Empowerment Against Poverty Program

The LEAP Program is an unconditional cash transfer program that provides cash payments and health insurance to extremely poor households across Ghana to alleviate short-term poverty and to encourage long-term human capital development. LEAP began a trial phase in March 2008 and then began expanding gradually in 2009 and 2010, and currently reaches approximately 35,000 households across Ghana with an annual expenditure of approximately 11 million USD. The program is fully funded from general revenues of the Government of Ghana, and is the flagship program of its National Social Protection Strategy. It is implemented by the Department of Social Welfare (DSW) in the Ministry of Employment and Social Welfare (MESW). Eligibility is based on households being classified as poor and having a household member in at least one of three demographic categories: single parent with orphan or vulnerable child (OVC), elderly poor, or person with extreme disability unable to work. Initial selection of households is done through a community-based process and is verified centrally with a proxy means test that examines household income.

A component of LEAP that makes it a unique program is that aside from direct cash payments, beneficiaries are provided free health insurance through the National Health Insurance Scheme (NHIS). This is facilitated through a Memorandum of Understanding between the MESW and Ministry of Health in which funds to cover enrollment in health insurance are transferred directly to the local health authority that issues cards to LEAP households. Continued receipt of cash payments from LEAP is conditional on having a health insurance card.

3.2.2 The National Health Insurance Scheme

The mission of the NHIS is to provide universal access to health care without out-of-pocket payment at the point of service use (National Health Insurance Authority, 2011). The NHIS is open to all Ghanaian citizens and currently covers 66 percent of all households (National Health Insurance Authority, 2011). The NHIS is the first large-scale national scheme of its kind in SSA and as such serves as a model for the region. To include the informal workforce and vulnerable populations (i.e. poor), the Government of Ghana has funded the NHIS through taxation to include coverage of the poor and vulnerable populations (Witter & Garshong, 2009).

Under the NHIS, the annual premium for each individual is based on their household's ability to pay. District-level committees categorize residents into four wealth quartiles and adjust premiums accordingly. The four wealth quartiles consist of the: core poor, poor, middle class, and rich/very rich. Premiums are subsidized for those persons older than 70 and the core poor. Based on the type of coverage, premiums range from 85 USD to 575 USD annually. All premiums provide coverage for dependents younger than 18 years of age. Benefits include out-patient and in-patient services, dental services, and maternal health services (National Health Insurance Authority, 2011). This program is the first part of the Government of Ghana's plan to reduce poverty through the National Social Protection Strategy (Ablo, 2011). To date, only one study has evaluated the impact of the NHIS on health. Mensah and colleagues found that women, who participated in the NHIS had increased chance of having antenatal care and having a skilled attendant at birth (Mensah, et al., 2009).

3.3 Objective

This paper focused on health inputs and outcomes to understand the impact of the cash transfer and health insurance. The model of human capital decision making was used for the selection of the key variables and outcomes (Strauss & Thomas, 2007). The Strauss and Thomas

model assumes that human capital is produced through the use of inputs such as time, health care visits, and purchased inputs, such as health commodities. The demand for these inputs is a function of household preferences for health, household income and prices. Any shifts in the level of inputs will drive changes in health status. LEAP would affect the outcome (health status) through the income effect of the unconditional cash transfer, as well as the price and income effect of the health insurance component. In theory, the effect of the cash transfer would lead to both a decrease in the cost of health care utilization and an increase in household income. If we consider health a normal good, then the consumption of health will increase with income, which will increase the demand for health. The health insurance component also will induce a price effect that would increase the demand for health services by decreasing the price of health services. For the scope of this paper, we focus primarily on the income effects of the cash transfer and health insurance.

This paper examined the use of unconditional interventions to boost health outcomes by evaluating the impact of an unconditional cash transfer program and a national social insurance scheme in Ghana, one of the only countries in SSA to have two such large scale programs operating in tandem. The analysis used a longitudinal, PSM design with data collected at baseline and 24 months after LEAP Program initiation. Our key empirical challenge was disentangling the effects of cash transfers from those of health insurance since LEAP beneficiaries were entitled to receive both benefits. We used the variation in NHIS coverage among LEAP beneficiaries brought about by administrative bottlenecks in implementation, as well as the variation in NHIS coverage among the matched comparison group to assess the impact of cash transfers versus health insurance on health outcomes at the household level and individual (child) level. This is the first study that provides a comparison of the impact of cash transfer versus health insurance on health outcomes, and to the best of our knowledge, it is the

first study to provide a rigorous evaluation of a national health insurance scheme from a developing country.

3.4 Methods

The overall design of the LEAP impact evaluation was a longitudinal PSM design. Using PSM, a comparison group was matched based on a set of observable characteristics that are thought to influence eligibility for LEAP. PSM has been shown to work well under certain conditions, when 1) there are numerous control variables to capture participation, 2) the same survey instrument is used for participants and nonparticipants, 3) and participants and nonparticipants are in the same labor market (Heckman, Hidehiko, & Petra, 1997). As these three conditions are met, the longitudinal, PSM approach was employed to create a counterfactual group to compare to households receiving cash transfer and health insurance.

Baseline data were collected from future beneficiaries in three regions (Brong-Ahafo, Central and Volta) who were part of a large, nationally representative sample of households surveyed as part of a research study conducted by ISSER and Yale University in the first quarter of 2010 (N=699). Subsequently, 699 households from the national ISSER survey were selected by PSM using one-to-one nearest neighbor approach to serve as a comparison group. The matched comparison group was drawn from the same three regions as the LEAP households as well as adjacent regions that were thought to contain households facing similar agro-ecological conditions as the intervention group.

This comparison group of "matched" households (N=699) was re-interviewed after 24 months along with LEAP beneficiaries to measure changes in outcomes across treatment and comparison group. During implementation of the follow-up survey, an additional 215 households were interviewed at follow-up from the ISSER sample. These households had similar propensity scores to the LEAP households and resided in the same communities that

were already being visited by the ISSER enumeration team and could be interviewed at low additional cost.

In Table 3.1 we show the mean characteristics of LEAP households with the respective matched sample. For comparison purposes, we also show means for the full ISSER rural sample to highlight the power of the PSM technique to select comparable households. For example, LEAP households had on average 0.44 children under the age of five compared to 0.73 in the full ISSER rural sample. The ISSER matched sample (LEAP comparison sample) contained 0.45 children under the age of five resulting in a comparison group that had fewer children than the full ISSER rural sample. This comparability was the case for almost all other indicators shown in the table—the matching technique was able to select a sub-group of households that resemble LEAP households on observed characteristics and that can then be used as a comparison group to assess program impacts.

Table 3.2 provides essential information on the samples for this evaluation. A total of 1,298 (out of 1,398) households were actually followed, for a success rate of 92 percent. A further 215 households from the ISSER sample with propensity scores that were just below those households of the matched sample and that resided in villages that were already being visited also were re-interviewed to increase the statistical power of the valuation for a final longitudinal sample of 1,504 households (858 ISSER, 646 LEAP), see Table 3.2.

The results for child level outcomes were based on a sample of 2,862 children (from the 1,398 baseline households). Of these children, 1,225 lived in LEAP households and 1,637 were from comparison group households. Of the LEAP children, 305 (25 percent) were between the ages of 0-5 and 593 (48 percent) were female. From the comparison households, 465 (48 percent) were between 0-5 and 796 (48 percent) were female.

The statistical approach we took to derive average treatment effects of LEAP was the difference-in-differences (DD) estimator. Two critical features of this design were particularly

attractive for deriving unbiased program impacts. First, using pre- and post-treatment measures allowed us to "difference" out unmeasured fixed (i.e. time-invariant) characteristics of the family or individual, which may affect outcomes such as motivation, health endowment, mental capacity or unobserved productivity. It also allowed us to "benchmark" the change in the indicator against its value in the absence of treatment. Second, using the change in a comparison group allowed us to account for general trends in the value of the outcome. The PSM approach within the context of the DD estimator has been shown to perform extremely well at replicating the experimental benchmark in social experiments (Heckman, Hidehiko, & Todd, 1997). Assessments of the PSM techniques in the context of cash transfer programs were quite positive and the necessary conditions were met in this study (Diaz & Handa, 2006; Handa & Mallucio, 2010). Data from the two samples was collected using the same survey instruments and field teams at the same time. As PSM used observable characteristics, it does not control for endogeneity caused by unobserved characteristics (Shadish, Cook, & Campbell, 2002). Using the DD model in combination with PSM will address endogeneity due to time-invariant unobserved characteristics.

As mentioned earlier, a further 215 households from the ISSER also were re-interviewed and included in the final longitudinal sample of 1,504 households. Table 3.3 shows mean characteristics (at baseline) of the LEAP sample, the original "matched" ISSER sample, and the 215 extra households. Numbers in bold indicate statistically significant differences from LEAP. There were a few differences between the ISSER matched sample and LEAP. The extra households were somewhat less similar to LEAP. Had they been more similar, they would have been part of the matched sample.

The inverse probability weighting (IPW) technique (Hirano, Imbens, & Ridder, 2003; Imbens & Wooldridge, 2009; Soares, Ribas, & Hirata, 2010; Wooldridge, 2007) uses the propensity score for each household in the matched groups as a "weight" in the statistical

analysis to reflect how similar it is to a LEAP household (the higher the score, the more similar the household to a treated household on average, and the greater the weight). IPW was used to adjust the 699 ISSER matched households and additional 215 households to make the final comparison sample similar to LEAP. The rightmost two columns of Table 3.3 show the weighted means for the original matched sample and the full ISSER sample that was interviewed at follow-up. With the weighting, the ISSER comparison group now appeared to be slightly poorer than the LEAP group (per capita expenditure 48 percent versus 55 percent in LEAP) with older household heads who are more likely to be female and widowed. Thus, the weighting provided for a way to further adjust the comparison sample to make it more similar to LEAP. We employed the IPW technique in our analysis of program impacts using the full 914 households from the ISSER sample.

3.5. Disentangling effects of NHIS and cash component of LEAP

Our primary empirical challenge was to disentangle the separate effects of cash transfer and NHIS on health care utilization. Prior to spelling out our identification strategy to disentangle these effects, we describe two important operational features of LEAP and NHIS which affected our analysis and the interpretation of the results. First, although NHIS was a component of the LEAP package, it was also being scaled up on its own during the study period. Table 3.4 shows that NHIS coverage in the comparison group increased by 18 percentage points. It rose more rapidly among the LEAP households showing an increase by 25 percentage points. Additionally, by 2012 coverage of NHIS among LEAP households was not universal. For the comparison households, selection into NHIS was most likely endogenous, as households self-select into their insurance status due to unobserved factors that also may influence health. For the LEAP households, on the other hand, we do not believe that NHIS was endogenous as NHIS was a benefit of the program, and enrollment in NHIS among LEAP households was related to supply-side constraints within LEAP rather than household self-selection.

The second noteworthy operational feature was that LEAP transfer payments were not only extremely low by international standards (7 percent of mean consumption compared to an average of approximately 22 percent among other major successful programs as shown in Figure 3.1) (Scott Stewart & Handa, 2008; UNICEF, 2008), but the payments themselves were highly irregular. Figure 3.2 shows the payment of LEAP transfers during the period of this assessment. Payment of grants was fairly regular during the first year of the study period, until May 2011 but then no payments were made for eight months. A triple payment was made in February 2012, which covered May – October 2011, and a regular payment was made in April 2012 that covered November-December 2011. Thus, LEAP households did not receive a steady flow of predictable cash transfer with which to smooth their consumption. In fact, there was indication that the large lump-sums may have provided an opportunity for spending on "lumpy" item such as paying down loans or investments (Handa, Park, Osei, & Osei-Akoto, 2012). Due to these operational challenges, we hypothesized that the impact of the cash transfer on health care utilization and expenditures will be small.

We now present our estimation strategy for measuring the impact of the cash transfer versus NHIS on health care utilization and out of pocket spending. Our basic estimation model is shown in equation (1):

$$(1) \quad Y_{it} = \alpha + \beta_1(2012)_{it} + \beta_2(T)_{it} + \beta_3(T * 2012)_{it} + \beta_4 X_{it} + \lambda_i + \varepsilon_{it}$$

In this framework "2012" is a dummy (indicator) variable equal to 1 if the observation pertains to the post-intervention period (2012), T is a dummy variable if the observation receives the treatment, and the DD estimate of impact is given by β_3—the interaction between the two variables. The coefficient β_2 is a measure of the pre-treatment mean difference in Y between treatment and comparison while β_1 measures general changes over time that will be important to control when outcomes are influenced by time trends. The X vector captures control variables and includes total household size and the age (in years), education (years completed),

sex, and marital status of the household head since the head's characteristics are unbalanced across the ISSER and LEAP samples. λ is a household fixed effect and t and i indicate year of survey and individual observation, respectively. The units of observation may be individuals or households depending on the outcome. As mentioned earlier, the regression is weighted using the IPW (LEAP observations are given a weight of 1). In addition, we include household fixed effects in all models to control for the endogeneity of participation in NHIS among the comparison group. For individual-level outcomes, we also estimate equation (1) by different age groups of children and by sex.

Model 1: We begin with a basic DD model that uses the entire sample and where treatment is represented by LEAP status. This model represents our first approximation of the impact of the cash transfer only, but it will also incorporate some of the effect of NHIS because though NHIS status is trending upwards in both groups the trend is greater in the LEAP group.

Model 2: This model augments Model 1 by including a dummy indicator for NHIS status which can vary over time. This approach controls for the different coverage rates of NHIS across the two samples and in principle provides us with a better estimate of the pure impact of the cash transfer and to a lesser degree the impact of NHIS as well.

Model 3: In this model, we control for NHIS by restricting our analysis sample to households that are enrolled in NHIS at baseline and in the follow-up wave. In this model, the comparison group consists of ISSER households that have NHIS at baseline and follow-up wave, and our treatment group only includes LEAP households that also have received NHIS in both waves. Since both the comparison and treatment groups have NHIS, the impact of NHIS will difference out and leave us with the pure impact of the cash transfer only.

Model 4: This specification attempts to estimate the pure NHIS effect by using only the ISSER sample. Within the ISSER sample, we identify two groups, one that has never received NHIS at either point in time and the other one that does not have NHIS at baseline but does at follow-up.

This DD model has NHIS as the treatment. The key limitation of this model is that we do not know the exact date that households enrolled in NHIS between baseline and follow-up.

Model 5: An alternative to Model 4 is to retain the group of households from the ISSER sample that never had NHIS and compare them to households who always had NHIS (at both baseline and follow-up). This estimate captures the dose effect of NHIS as the treatment. The difference between this specification and Model 4 is that in Model 5 we effectively measure the impact of at least two years of NHIS. While in Model 4, we estimate the impact of at most 2 years of NHIS.

Note that these estimates of the impact of NHIS are based on households from the ISSER comparison group that are similar to LEAP households and provide us with an estimate of NHIS in LEAP-type households. As a result, the ISSER matched sample offers a unique opportunity to estimate the impact of NHIS on LEAP. Table 3.5 gives a summary of the different identification strategies. In addition, as mentioned earlier, we include household fixed effects in all estimates to address the fixed, household level heterogeneity that might lead some households to aggressively seek NHIS enrollment—under the maintained assumption that the unobserved "taste for health insurance" is fixed over time this strategy addresses the endogeneity of NHIS enrollment.

3.6 Results

Our main results were that the NHIS successfully reduced out-of-pocket health spending and increased use of health services while the LEAP Program does neither. In fact we reported a small decline in health care utilization associated with the cash transfer itself. The lack of impact of the cash transfer on health outcomes is consistent with the evidence to date on such programs in SSA, whereas the positive impact of the NHIS alone on health outcomes suggests that in SSA, providing the cash transfer alone is not enough to boost health care utilization rates and subsequent health outcomes. Results at the household and individual levels are presented below.

Household level

At the household level, the two outcomes we focused on for this study are out-of-pocket health care spending and health facility utilization. We believe that these outcomes are the most likely immediate responses to health insurance coverage. Health spending was defined in monthly per capita Ghana Cedis whereas utilization was an indicator equal to 1 if any household resident sought care at a health facility for any reason in the past four weeks. Table 3.6 shows means for the two variables by sample and round. Health spending increased over this period but increased by about 4.50 Ghana Cedis less among LEAP households. There was no change in health care utilization in LEAP households over the study period, but a 13 percentage point increase was observed among the comparison group.

Columns (1) and (2) of Table 3.7 present results for the two outcomes and the five different models. The top three rows show impacts for "cash transfer only" and indicate that the cash component of LEAP appears to have led to a decline in health spending by 3.52 to 4.07 Ghana Cedis depending on the model. We believe Model 3 is the best estimate of the pure cash component of LEAP. In Model 1, LEAP households had 4.07 Ghana Cedis lower health spending than the comparison households, and this amount was reduced to 3.52 Ghana Cedis in Model 3. The cash component of LEAP also appeared to have reduced health care utilization with point estimates ranging from 14 to 17 percentage points in column (2) of Table 3.7.

Models 4 and 5 show the impact of NHIS alone on LEAP-type households based on the ISSER comparison sample. These results indicate that NHIS reduced health care spending, as we would expect between 2.92 to 3.84 Ghana Cedis per person per month. These are not statistically significant at conventional levels. In addition, NHIS increased the use of health care by 31 percentage points among those who initially joined NHIS and by 9 percentage points among those who have had NHIS for at least two years. However, results are also not

statistically significant. These results were anticipated, as we expected more households to engage in health service use when they first enroll in health insurance.

Controlling for expenditure

We mentioned earlier that the cash component of LEAP was quite irregular and in fact did not represent a predictable flow of cash for the household. The periodicity of the payments was thus unlikely to have performed a consumption smoothing function among beneficiary households, and this expectation was borne out in Figure 3.3 that depicts the densities of per capita consumption for LEAP and comparison households over the study period. There appeared to be a decline in consumption among LEAP households relative to the comparison group. On the other hand, as mentioned earlier, LEAP households were significantly more likely to pay down loans and to increase savings relative to the comparison households. In other words, LEAP households spent their windfall transfer receipts on non-consumption goods including precautionary savings, which seems plausible in the presence of credit constraints. In light of this, the relevant question is whether LEAP households have lower health expenditure because of their lower overall consumption; that is, is their health expenditure commensurate with their overall level of consumption? Columns (3) and (4) in Table 3.7 address this question by adding a control for total per capita monthly consumption expenditure to the regression models. Although health expenditures and per capita expenditures are jointly determined and may cause endogeneity, per capita expenditures were included as a control variable as we believe that this approach allows us to examine the relationship between expenditure on health and total expenditure based on the principle of Engel curves. Using total per capita expenditure as a control variable will help to determine whether their consumption of health is explained by their overall consumption (Chai & Moneta, 2010; Lewbel, 2006).

The top three rows of column (3) indicate that the lower health spending among LEAP households was strictly a function of their overall lower total consumption rather than any

direct impact of the cash component of LEAP. Alternatively, one can argue that the sporadic payments of cash did not lead to increases in consumption among beneficiaries, and so had no impact on health expenditure. On the other hand, there continued to be a negative impact of the cash component of LEAP on health care utilization even after controlling for overall consumption levels. We also reran the models controlling for per capita expenditure minus health expenditures to address concerns that health expenditure might be jointly determined with overall per capita expenditure. These results are presented in Table 3.8. Results were similar to those in column (1) in Table 3.7. However, when we control for per capita expenditure minus health expenditures, we found that the cash transfer of LEAP still led to statically significant decreases in health expenditure for LEAP participants. However, these results were not statistically significant in Model 3.

We also examined whether the same holds true for households with lower expenditure. To test this, we restricted the sample to households below the IPW weighted median household expenditure of 42 Ghana Cedis at baseline and examined the treatment effects including the control for total per capita monthly consumption expenditure. These results are presented in columns (5) and (6) in Table 3.7. We found that in the poorest households in the household sample, the LEAP Program still led to decreases in health expenditures as well as decreases in sought care. Although for the full sample, we found that the cash transfer does not impact health expenditures. The decreases in health expenditure are much smaller (-1.23 to -1.34 Ghana Cedis) than for the full sample (-3.52 to -4.07 Ghana Cedis) that did not control for per capita expenditure. These results further support our hypothesis that the decrease in health expenditure was most likely due to lower total consumption. In theory, as health is a normal good, the income effect of the cash transfer would lead to an increase the demand of health services. However, our results do not consistently support this theory and suggest that the

impacts of the programs were more complex than income effects that were perhaps weakened by the amount of debt that LEAP households had prior to initiation of the program.

Child level

At the child (individual) level, we examined the impact of the LEAP and NHIS programs on health outcomes of children. We were interested in examining whether the cash transfers promoted the use of preventive services that included vaccinations, deworming, and iron supplements. Preventive services offer an opportunity for parents to have early contact with the health system which is an important opportunity for them to receive information to inform caretakers' decisions and practices to improve child health status and to protect children from diseases. For this analysis, we utilized the household health section from the survey. The sample includes all children aged 0-17 years from LEAP and ISSER rural households. Health outcomes we analyzed were: 1) illness, which is measured by whether the child was sick in the past four weeks; 2) health care use, whether any health care facility was used for those children who were sick/injured; and 3) preventive care, whether any health care facility was used for preventive care.

Table 3.9 shows the results of the impact of the LEAP and NHIS programs on health outcomes for children aged 0-17 years. As in the previous tables, the top three rows show impacts for the cash transfer only. The results indicated that the cash component of LEAP led to a decline in the use of health services by approximately 8 percentage points (column (2) of Table 3.9). This decline was consistent across all models. For preventive care use, the cash appeared to have no impact, which was as expected, as the majority of the children in the 0-17 sample were over 5 years of age and most of the preventive services are provided to children under 5. The cash component of LEAP showed a decrease in prevalence in the illness of 5 to 8 percentage points, shown in column (1). Comparing the results from Models 1 to 3, we saw that the impact of cash transfer on illness decreases but still demonstrated that cash transfer

reduces morbidity due to illness although results for Model 3 in column (1) are not statistically significant. However, as cash transfers do not often address the diverse factors that cause illness, it is difficult to decipher the mechanism that the cash transfer reduces illness.

Rows (4) and (5) of Table 3.9 show the impact of NHIS on health outcomes of children under 17 that are very similar to the results at the household level. For children aged 0-17 years who have had NHIS for at least one year, we found that NHIS increases the use of health services by 17 percentage points. For those who have had NHIS for at least two years, an increase of 5 percentage points was observed. For preventive services, we found that NHIS increases preventive health services by about 2 percentage points for those children with NHIS for at least one year and no impact of the use of preventive services for children with at least of two years of NHIS. Interestingly, we also found that NHIS is associated with an increase in illness of 3 to 12 percentage points, which may be related to endogeneity issues of household selection into NHIS where there are time-varying unobserved factors related to NHIS enrolment. As these are time-varying factors, they were not controlled for by the DD model.

Impact of LEAP and NHIS on young children

Poverty in early childhood has been shown to have devastating long-term effects, such as lower cognitive ability, lower academic achievement, and reduced future income potential (Aber, et al., 1997). Additionally, children living in poverty are more likely to perpetuate the poverty cycle through inter-generational effects of poverty (Adato & Bassett, 2009; Barrientos & DeJong, 2006). Research also has shown that childhood interventions that focus on health and nutrition have larger impacts for younger children (Engle, et al., 2007).

As birth to age 5 is a critical time due to the importance in child cognitive development and long-term well-being during this stage, we analyzed children under the age of 5 separately from children aged 6-17 to examine whether there is a differential effect of these programs for these subgroups. Additionally, as the disease burden and health care requirements are different

for pre-school children and older children, it is important to analyze these subgroups separately. To examine the effects of the LEAP and NHIS programs on health outcomes during this important developmental stage, we replicated the models restricting the sample to children under the age of 5. These results are presented in Table 3.10. We found similar results with this subgroup as with the overall sample. For children under the age of 5, the LEAP Program has a limited impact on use of health service use (in rows 1-3 of Table 3.10). However, there appeared to be an increase in the likelihood of using preventive services by 4 to 5 percentage points, but this results was not statistical significant. For children under the age of 5 with at least one year of NHIS (Model 4), NHIS increased the use of health services substantially by 12 percentage points. For children under the age of 5 with at least two years of NHIS, there was no impact of NHIS on the likelihood of using health services.

Impact of LEAP and NHIS by gender

We also investigated whether there are different program effects by gender of the child. Previous evaluation studies of CCT have found heterogeneous treatment effects by gender. Studies of CCTs in Latin America found that programs had larger impacts in outcomes for girls than boys (Schultz, 2004; E Skoufias & Parker, 2001). Programs may have different effects by gender due to household preferences where households may choose to invest more in boys than girls or may be due to differences in outcomes. For example, girls may have substantially lower school enrollment and may show larger impacts because the gap is so large.

Table 3.11 shows the results of the impact of the LEAP and NHIS programs on health outcomes by gender of the child. The top panel presents the impact of the cash component of LEAP restricting the sample to girls aged 0-17. The second panel shows the results of the cash transfer restricting the sample to boys aged 0-17. When comparing the results, there appeared to be a differential treatment effect by gender. For girls, LEAP led to a decline in the use of health services ranging from a decrease of 12 to 13 percentage points. While for boys, we found

a negligible impact of the cash transfer on use of health services. For both groups, we do not see any impact of the cash transfer on the use of preventive health services.

In the bottom two panels of Table 3.11, we examined the impact of NHIS and also found gender-differentiated impacts on health. For girls, there was an increase of health service use of 29 percentage points in Model 4. Interestingly, there was also a large increase of 12 percentage points in Model 5. There was a small increase of 1 to 2 percentage points in the use of preventive services, but these increases are not statistically significant. For boys, it appeared that NHIS does not affect the utilization of health services. There was an apparent increase in the use of health services for boys more recently enrolled in NHIS as demonstrated by the results of Model 4 but the impact of NHIS was muted for NHIS beneficiaries with at least two years of enrollment presented in Model 5.

3.7 Discussion

This paper compared the impact on health care utilization and health spending of a social insurance scheme and an unconditional cash transfer, both major social programs in Ghana. At the household level, the cash component of LEAP was administered sporadically and in a manner that did not allow households to smooth consumption. As a result, the cash component did not affect health spending and seemed to have reduced health care utilization. In light of the operational challenges and overall low transfer level, these results are not surprising. We observed strong positive impacts of the NHIS on health care utilization, and large (approximately 6 percent at the mean) reductions in out-of-pocket costs though the latter were not statistically significant. Among those who recently obtained NHIS, we found a remarkable 31 percentage point increase in overall utilization rates at the household level, and even among those with NHIS for over two years utilization, rates are 9 points higher than those without NHIS.

At the child level, the overall results on health indicate that the LEAP Program had negligible impacts on health use while NHIS increased use of health services including preventive services. When we examined the impact of programs by age groups, we found the effect of the LEAP Program to be much stronger among children under the age of 5 which is noteworthy in light of the importance in child cognitive development and long-term well-being during this stage. We also did not find that the LEAP Program increased the use of preventive health services for children in this age range. In our models examining the impact of NHIS, it appeared that NHIS increased the use of health services for children but had very little impact on preventive health service use. This may be due to the fact that children enrolling in NHIS were already sick and were more likely to use health services, which would suggest there was endogeneity affecting our estimates.

When comparing the impact of the LEAP and NHIS for the different samples of children, we found gender-differentiated impacts of the two programs on health and that the effect of the two programs for children was in fact driven by effect of the program on girls. When we look at the impact of NHIS and LEAP impact of the disaggregated samples by gender, the impact of LEAP on morbidity and preventive care use was much stronger among girls relative to boys. For girls, NHIS significantly increased use of services for girls more than boys. This is positive, as in some developing countries girls were found to be less likely to receive any treatment (Filmer, King, & Pritchett, 1998). Based on these results, further investigation is recommended to get to the root of why there is a differential effect.

Several potential limitations to this paper merit discussion. If selection into NHIS is due to unobserved, time-varying factors, the DD model will not properly address endogeneity and estimates will most likely be biased. For Models 4 and 5 in particular, there are endogeneity concerns as we expect the NHIS adoption is highly endogenous. To address this issue, one solution would be to use the sample of LEAP households to identify two groups. Our

comparison group would consist of LEAP households that have never received NHIS at either point in time and the treatment group would be LEAP households that do not have NHIS at baseline but do at follow-up. This alternate approach would alleviate endogeneity concerns as selection into NHIS for LEAP households is most likely not endogenous and more related to supply-side issues.

In Model 4, there are also possible sample selection issues as we restricted the sample to households that have NHIS at baseline and there may be sample selection bias as the dependent variable is observed for this restricted nonrandom sample. This sample selection problem can be addressed by including the LEAP and ISSER matched households from the analytical sample. By not restricting the sample by NHIS enrollment, we will avoid the sample selection problem. However, there will now be endogeneity concerns that can be addressed through the fixed effects and DD model if selection into NHIS is due to unobserved, time-invariant factors. A further discussion of this is presented in Appendix 1.

Another limitation of this study is the difficulty in disentangling the importance or significance of decreased health expenditure. In our results, decreased health expenditure may not necessarily signify that the LEAP Program was ineffective in improving the health of participant children. Decreased health expenditures may be a result of reduced health utilization, which in turn may be related to lower prevalence of illness in LEAP households.

One other limitation is that we were unable to control for community supply-side investments, as the data were not available at this time. Although unconditional cash transfer programs are not dependent on supply-side interventions, the provision of supply-side investments is still needed to complement these demand interventions to improve the health of children and household members. It is recommended that community-level variables be used to control for availability and access of services in the different communities. Additionally, we have shown that the impact of the cash component is most likely related to lower levels of

consumption by LEAP households rather than a direct impact of the cash transfer. It would also be useful to see how these results at the child level change when controlling for household expenditure.

3.8 Conclusion

Despite these limitations, we were able to assess the overall effectiveness of the LEAP Program. In doing so, we assessed the relative merits of cash transfer versus health insurance. It is difficult to draw strong conclusions about the relative merits of cash transfer versus health insurance on healthcare utilization from this study, both on theoretical and practical grounds. On theoretical grounds, health insurance exerts both an income and substitution effects on the consumption of health care and so is expected to have a larger impact on utilization than a straight cash transfer. On practical grounds, the implementation of the cash component of LEAP was such that it did not lead to an increase in permanent consumption that is needed to trigger the income effect necessary to increase health care utilization. The lumpy payments on the other hand have enabled LEAP households to pay down loans and increase savings, which a health insurance scheme is not expected to do. For the cash component of LEAP, we note that the apparent negative impact of the transfer of 14 percentage points is more than offset by the positive impact of the NHIS component of LEAP of 28 percentage points that implies an overall net increase of 14 percentage points in utilization. This accounting, plus the aggressive expansion of NHIS among LEAP households, means that access to health care has increased significantly among the poor in rural Ghana. These results show that NHIS is a critical component of the LEAP Program, and that the comprehensive LEAP Program of the cash transfer and health insurance increases access to health services among poor and vulnerable households.

3.9 Tables and Figures

Table 3.1: Characteristics before and after matching

	LEAP	ISSER Rural	ISSER PSM
Demographics			
Household size	3.83	**4.12**	3.69
Children under 5	0.44	**0.73**	0.45
Children 6-12	0.77	0.84	0.76
Children 13-17	0.54	**0.47**	0.50
Elderly (>64)	0.76	**0.31**	**0.65**
Number of orphans	0.62	**0.15**	**0.34**
Orphan in household	0.27	**0.09**	**0.19**
NHIS	0.64	**0.56**	**0.58**
Head characteristics			
Female head	0.59	**0.28**	0.54
Age of head	60.92	**49.12**	59.42
Widowed	0.39	**0.13**	**0.30**
Head schooling	0.30	**0.57**	**0.47**
Household characteristics			
No kitchen	0.09	**0.03**	0.07
No toilet	0.31	**0.37**	0.31
Pit latrine	0.38	**0.46**	0.42
Thatch roof	0.31	**0.20**	**0.23**
Shared dwelling	0.29	**0.24**	0.27
Exclusive kitchen	0.31	**0.58**	**0.38**
Unprotected water source	0.21	**0.24**	0.23
Per capita spending	55.46	**67.05**	**60.06**
Livestock owned	0.41	**0.57**	0.44
	N=699	N=3136	N=699

Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-Per capita spending is presented in Ghana Cedis.
-ISSER PSM represents the 699 comparison group households matched using PSM.

Table 3.2: Samples for LEAP Impact Evaluation

	2010	2012
LEAP	699	646
ISSER Samples		
Matched	699	643
Unmatched	215	215
Total longitudinal sample		1,504

Table 3.3: Mean baseline characteristics LEAP and ISSER samples

		Unweighted		Weighted	
Indicator Variables	**LEAP**	**ISSER PSM**	**ISSER Extra**	**ISSER PSM**	**ISSER Final**
Demographics					
Household size	3.83	3.69	3.98	3.99	3.99
Children under 5	0.44	0.45	**0.70**	0.40	0.40
Children 6-12	0.77	0.76	0.84	0.81	0.82
Children 13-17	0.54	0.50	0.50	**0.64**	**0.63**
Elderly (>64)	0.76	**0.65**	**0.24**	**1.03**	**0.78**
Number of orphans	0.62	**0.34**	**0.14**	0.50	**0.48**
Orphan in household	0.27	**0.19**	**0.08**	0.30	0.30
NHIS	0.64	**0.58**	0.57	0.66	0.66
Head characteristics					
Female head	0.59	0.54	**0.37**	**0.65**	**0.64**
Age of head	60.92	59.42	**48.57**	**67.19**	**66.37**
Widowed	0.39	**0.30**	**0.13**	**0.46**	**0.44**
Head schooling	0.30	**0.47**	**0.61**	0.33	0.34
Household characteristics					
No kitchen	0.09	0.07	**0.05**	0.10	0.10
No toilet	0.31	0.31	0.30	0.31	0.31
Pit latrine	0.38	0.42	0.47	0.37	0.38
Thatch roof	0.31	**0.23**	0.24	0.30	0.30
Shared dwelling	0.29	0.27	**0.20**	0.32	0.31
Exclusive kitchen	0.31	**0.38**	**0.50**	0.31	0.32
Unprotected water	0.21	0.23	0.21	0.20	0.20
Per capita spending	55.46	**60.06**	**61.09**	**48.47**	**48.99**
Livestock owned	0.41	0.44	0.44	0.41	0.41
Propensity Score	0.52	0.38	0.12	0.63	0.60
	N=699	N=699	N=215	N=699	N=914

Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-Per capita spending is presented in Ghana Cedis.
-ISSER PSM represents the 699 comparison group households matched using PSM.
-ISSER Extra represents the additional 215 households from the ISSER sample re-interviewed in 2012.
-ISSER Final represents the final 914 comparison group households (699+215).

Table 3.4: Enrollment in NHIS by sample and year (%)

Year:	2010	2012	1st difference
LEAP	65	90	25
Comparison Group	58	76	18

Table 3.5: Summary of empirical models

	Sample	Estimation Strategy	Impact
1	LEAP and comparison group	DD w/ LEAP as treatment	Cash Transfer
2	LEAP and comparison group	DD w/ LEAP as treatment + NHIS dummy	Cash Transfer
3	LEAP and comparison group with NHIS at baseline and follow-up	DD w/ LEAP as treatment	Cash Transfer
4	Comparison group without NHIS at baseline	DD w/ NHIS as treatment	NHIS after <2 years
5	Comparison group with no change in NHIS status (never or always)	DD w/ NHIS as treatment	NHIS after 2+years (dosage)

Table 3.6: Means of outcomes by sample

	LEAP		Comparison group	
	2010	2012	2010	2012
Household level				
Full sample				
Health spending (Gh Cedis)	4.37	6.53	2.26	9.08
Sought care	0.16	0.16	0.07	0.20
Below median expenditure sample				
Health spending (Gh Cedis)	2.17	2.49	1.23	2.46
Sought care	0.16	0.16	0.06	0.17
Child level				
Children 0-17				
Illness	0.10	0.10	0.07	0.10
Sought care	0.08	0.08	0.05	0.07
Preventive care	0.01	0.02	0.01	0.02
Children 0-5				
Illness	0.15	0.20	0.12	0.14
Sought care	0.14	0.22	0.07	0.11
Preventive care	0.02	0.09	0.02	0.02
Girls 0-17				
Illness	0.08	0.11	0.07	0.10
Sought care	0.06	0.08	0.04	0.07
Preventive care	0.01	0.02	0.01	0.02
Boys 0-17				
Illness	0.11	0.09	0.08	0.10
Sought care	0.09	0.08	0.05	0.07
Preventive care	0.01	0.03	0.02	0.01

Table 3.7: Impact of the cash transfer and NHIS on health utilization and health expenditures

			Controlling for per capita total expenditure *			
	(1) Health Exp	(2) Sought care	(3) Health Exp*	(4) Sought care*	(5) Health Exp**	(6) Sought care**
1) LEAP	**-4.07**	**-0.16**	-0.02	**-0.15**	**-1.31**	**-0.15**
	(3.46)	(4.49)	(0.02)	(4.13)	(4.28)	(2.72)
	(N=2840)	(N=1810)	(N=2840)	(N=1810)	(N=1248)	(N=998)
2) LEAP with NHIS dummy	**-3.82**	**-0.17**	0.03	**-0.16**	**-1.23**	**-0.14**
	(3.21)	(4.69)	(0.03)	(4.33)	(3.94)	(2.47)
	(N=2839)	(N=1810)	(N=2839)	(N=1810)	(N=1248)	(N=998)
3) LEAP with NHIS at all waves	**-3.52**	**-0.14**	0.66	**-0.14**	**-1.34**	**-0.16**
	(2.32)	(2.93)	(0.52)	(2.89)	(3.64)	(2.05)
	(N=1997)	(N=1292)	(N=1997)	(N=1292)	(N=850)	(N=686)
4) NHIS after one year	-3.84	**0.31**	-2.96	**0.28**	-0.23	0.04
	(1.21)	(4.98)	(1.08)	(4.56)	(0.36)	(0.53)
	(N=1219)	(N=784)	(N=1219)	(N=784)	(N=436)	(N=362)
5) NHIS after two years	-2.92	0.09	-2.33	0.09	0.77	0.15
	(1.14)	(1.68)	(1.09)	(1.65)	(1.42)	(1.45)
	(N=1264)	(N=776)	(N=1264)	(N=776)	(N=503)	(N=396)

*Indicates results for full sample.
** Indicates results for households below median per capita expenditure.
t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.
-Health exp represents health expenditures.

Table 3.8: Impact of the cash transfer and NHIS on health utilization and health expenditures

	(1) Health Expenditure	(1) Health Expenditure*
1) LEAP	**-4.07**	**-3.12**
	(3.46)	(2.64)
	(N=2840)	(N=2840)
2) LEAP with NHIS dummy	**-3.82**	**-2.97**
	(3.21)	(2.49)
	(N=2839)	(N=2839)
3) LEAP with NHIS at all waves	**-3.52**	-2.33
	(2.32)	(1.54)
	(N=1997)	(N=1997)
4) NHIS after one year	-3.84	-3.84
	(1.21)	(1.21)
	(N=1219)	(N=1219)
5) NHIS after two years	-2.92	-2.95
	(1.14)	(1.16)
	(N=1264)	(N=1264)

* Indicates results for full sample, controlling for per capita expenditure –per capita health expenditure.
-t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Table 3.9: Impact of the cash transfer and NHIS on children aged 0-17

	(1) Illness	(2) Sought care	(3) Preventive
1) LEAP	**-0.08**	**-0.07**	0.00
	(4.64)	(4.61)	(0.55)
	(N=4907)	(N=4780)	(N=4333)
2) LEAP with NHIS dummy	**-0.08**	**-0.08**	0.00
	(4.92)	(4.97)	(0.46)
	(N=4880)	(N=4775)	(N=4328)
3) LEAP with NHIS at all waves	-0.05	**-0.08**	-0.01
	(1.95)	(3.14)	(1.00)
	(N=2673)	(N=2593)	(N=2336)
4) NHIS after one year	**0.12**	**0.17**	**0.02**
	(3.98)	(6.50)	(2.15)
	(N=2279)	(N=2270)	(N=2068)
5) NHIS after two years	0.04	**0.05**	0.00
	(1.68)	(2.77)	(0.44)
	(N=2084)	(N=2080)	(N=1905)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Table 3.10: Impact of the cash transfer and NHIS on children under the age of 5

	(1) Illness	(2) Sought care	(3) Preventive
1) LEAP	-0.01	0.01	0.05
	(0.21)	(0.32)	(1.79)
	(N=1249)	(N=1211)	(N=1029)
2) LEAP with NHIS dummy	-0.03	0.00	0.04
	(0.58)	(0.03)	(1.40)
	(N=1239)	(N=1210)	(N=1028)
3) LEAP with NHIS at all waves	-0.08	0.00	
	(1.03)	(0.07)	
	(N=651)	(N=627)	(N=24*)
4) NHIS after one year	**0.22**	**0.12**	0.01
	(2.67)	(1.96)	(0.53)
	(N=612)	(N=606)	(N=520)
5) NHIS after two years	**0.12**	0.00	0.00
	(2.22)	(0.01)	(0.00)
	(N=527)	(N=523)	(N=454)

*Sample size was too small to calculate estimates.
t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Table 3.11: Impact of the cash transfer and NHIS by gender

	(1) Illness	(2) Sought care	(3) Preventive
Girls aged 0-17			
1) LEAP	**-0.12**	**-0.11**	0.00
	(4.47)	(4.36)	(0.04)
	(N=2352)	(N=2280)	(N=2075)
2) LEAP with NHIS dummy	**-0.13**	**-0.12**	0.00
	(4.83)	(4.75)	(0.11)
	(N=2336)	(N=2277)	(N=2072)
3) LEAP with NHIS at all waves	**-0.12**	**-0.13**	**-0.03**
	(2.58)	(3.23)	(2.14)
	(N=1305)	(N=1259)	(N=1126)
Boys aged 0-17			
1) LEAP	-0.01	-0.03	0.01
	(0.53)	(1.67)	(0.68)
	(N=2555)	(N=2500)	(N=2258)
2) LEAP with NHIS dummy	-0.01	-0.04	0.01
	(0.26)	(1.74)	(0.58)
	(N=2554)	(N=2498)	(N=2256)
3) LEAP with NHIS at all waves	0.06	**0.12**	0.01
	(1.51)	(3.34)	(1.00)
	(N=1368)	(N=1334)	(N=1210)
Girls aged 0-17			
4) NHIS after one year	**0.19**	**0.28**	0.02
	(3.41)	(5.83)	(1.14)
	(N=1066)	(N=1060)	(N=971)
5) NHIS after two years	0.06	**0.12**	0.01
	(1.51)	(3.34)	(1.00)
	(N=976)	(N=975)	(N=901)
Boys aged 0-17			
4) NHIS after one year	0.01	0.05	0.01
	(0.35)	(1.63)	(0.72)
	(N=1213)	(N=1210)	(N=1097)
5) NHIS after two years	-0.01	-0.02	-0.02
	(0.41)	(1.04)	(1.21)
	(N=1108)	(N=1105)	(N=1004)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Figure 3.1: Transfer as a share of household consumption

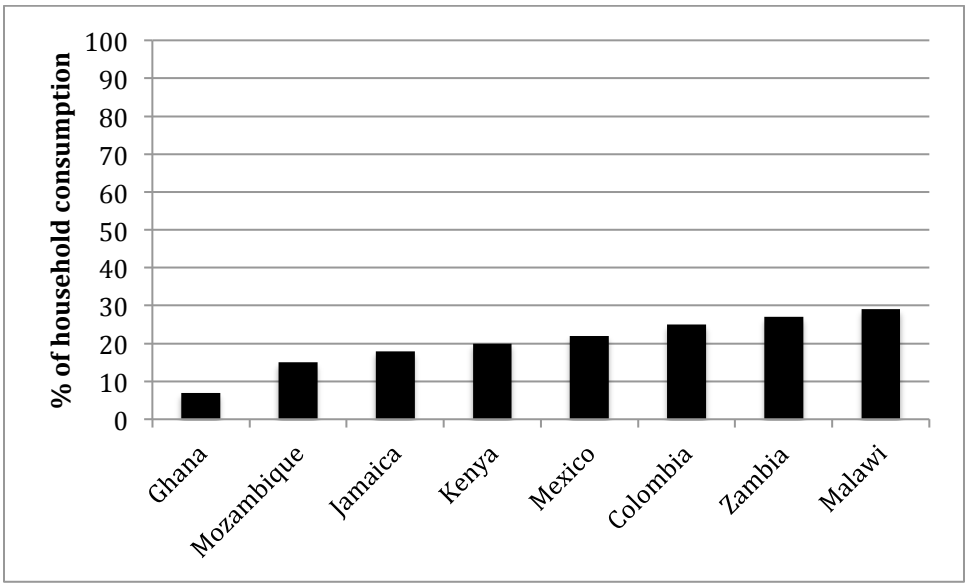


Figure 3.2: LEAP payment frequency

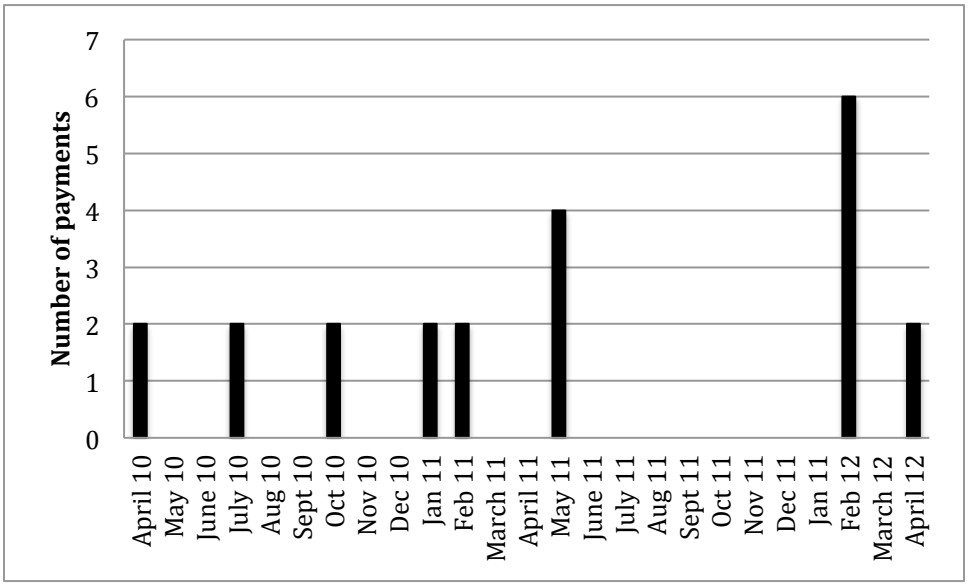
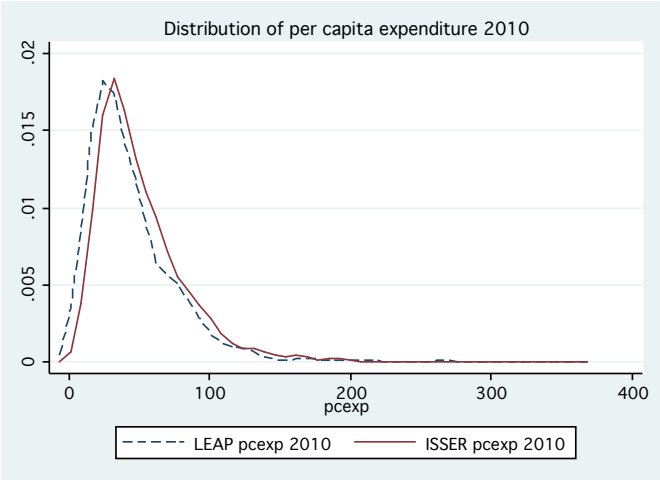
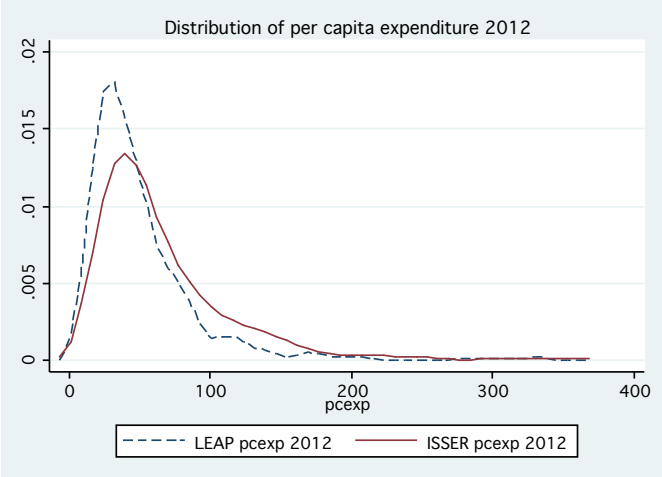


Figure 3.3: Distributions of per capita expenditure 2010 and 2012





CHAPTER 4: THE IMPACT OF AN UNCONDITIONAL CASH TRANSFER PROGRAM ON EDUCATION OUTCOMES: EXPERIENCE IN GHANA

4.1 Introduction

Cash transfer programs are a promising way to address poverty and child protection. Cash transfer programs represent a policy shift towards demand-focused interventions to support the poor and vulnerable populations such as orphans and vulnerable children (Rawlings & Rubio, 2005). Cash transfer programs are rapidly spreading across the developing world as a powerful tool to mitigate the short-term impacts of poverty and to break the inter-generational transfer of human capital deficits.

There are two primary types of cash transfer programs: Conditional cash transfer (CCT) and unconditional cash transfer programs. CCT programs are primarily implemented in Latin America and the Caribbean. For CCT programs, households must meet certain criteria or behaviors, such as enrolling their children in school or vaccinating their children, in order to receive the cash transfer (World Bank, 2009). Typically, unconditional cash transfer programs do not have conditions for receipt of the transfers. For both CCT and unconditional programs, the cash is distributed in small amounts over time, with the cash operating as an income transfer. This approach allows the cash transfer programs to support long-term economic development by advancing household capital accumulation through supporting consumption in the short-term and allowing families to invest in the human capital of their children. Based on the results of the first generation of cash transfer programs in Latin America, more than 30 other developing countries have begun to implement similar cash transfer programs. In recent years, several African governments, including Ghana, have launched cash transfers programs targeting vulnerable groups. However, the lessons learned from the Latin America programs

may not be transferable to the sub-Saharan African (SSA) context. As cash transfer programs in SSA are faced with higher poverty rates, lower institutional capacity and quality of services, and less access to health and social services, conditional cash transfers are more difficult to implement in Africa (Devereux, 2006). As a result, cash transfer programs in Africa are usually unconditional rather than conditional.

4.1.1 Impact of cash transfer programs on education

The impact of cash transfer programs on education has been well studied for CCT programs in Latin America. Many CCT programs have been shown to have positive effects on school enrollment. In Mexico, Schultz demonstrated that the national CCT program, Progresa, increased school enrollments, particularly at the post-elementary level. Impacts on primary school enrollment alone were limited, which may be attributed to already high primary school enrollment rates (Schultz, 2004). Skoufias also showed that the Progresa increased primary school enrollments by 0.96 to 1.45 percentage points for girls and 0.74 to 1.07 percentage points for boys (Emmanuel Skoufias, 2001). Additionally, Skoufias found that Progresa increased secondary school enrollments by as much as 9.3 percentage points (Emmanuel Skoufias, 2001). The CCT program in Nicaragua also showed positive impacts on primary school enrollment, with increases of over 21 percentage points (IFPRI, 2002).

As many of the cash transfers in sub-Saharan Africa tend to be unconditional, there is a need to increase the evidence examining the impact of unconditional cash transfer programs on education. Two studies of unconditional cash transfer programs in Africa have shown that the impacts of unconditional cash transfer on schooling are strong and equivalent to the conditional programs in Latin America (Kenya CT-OVC Evaluation Team, 2012; Samson, et al., 2010). However, it is important to continue developing the evidence base on how unconditional cash transfers reduce the effects of poverty on children and improve human capital development.

This paper examined the impact of an unconditional cash transfer program in Ghana on education. Our data come from the impact evaluation of the Livelihood Empowerment Against Poverty (LEAP) Program, Ghana's flagship poverty alleviation program that provides unconditional cash transfers to poor and vulnerable households along with free enrollment in the county's National Health Insurance Scheme. The evaluation uses longitudinal, propensity score matching (PSM) design with data collected at baseline and 24 months after LEAP Program initiation. We used different specifications of the model to compare the impact of LEAP by gender and poverty. To examine whether the behavior changes and positive impacts on education were driven by an income effect of the cash transfer or other factors such as perceived conditions, we exploited the data using questions from the LEAP operations questionnaire from the 2012 follow-up survey to explore the issue of conditionalities and the effect of perceived conditions on the impact of the LEAP Program on education.

4.2 Ghana context

Despite improvements in poverty in the past ten years, Ghana remains one of the poorest countries in the world and is ranked 130 out of 169 countries in the 2010 Human Development Index (United Nations Development Fund, 2011). In 2011, the estimated population was more than 24.7 million with half of the population residing in rural areas (Central Intelligence Agency, 2011). An estimated 30 percent of the population in Ghana still lives below the international poverty line of 1.25 USD a day and is vulnerable to health and economic shocks (United Nations Development Fund, 2011).

To address chronic poverty in Ghana, the Government of Ghana developed a National Social Protection Strategy (NSPS) to protect the social development of poor and vulnerable households in Ghana (Sultan & Schrofer, 2008). The NSPS provides a policy framework for targeted interventions to protect vulnerable households from economic shocks and to provide social safety nets.

4.2.1 Livelihood Empowerment Against Poverty

The LEAP Program is the first part of the Government of Ghana's plan to reduce poverty through the NSPS (Ablo, 2011). LEAP is an unconditional cash transfer program which provides a cash transfer and health insurance to extremely poor households across Ghana in order to alleviate short-term poverty and to encourage long-term human capital development. LEAP began a trial phase in March 2008 and then expanded gradually in 2009 and 2010, and currently reaches approximately 35,000 households across Ghana. LEAP has an annual expenditure of approximately 11 million USD. The program is fully funded from general revenues of the Government of Ghana and is the flagship program of its NSPS. It is implemented by the Department of Social Welfare (DSW) in the Ministry of Employment and Social Welfare (MESW). Eligibility is based on poverty and having a household member in at least one of three demographic categories; single parent with orphan or vulnerable child (OVC), elderly poor, or person with extreme disability unable to work. Initial selection of households is done through a community-based process and is verified centrally with a proxy means test.

4.2.2 Education in Ghana

The Government of Ghana is committed to achieving universal primary education ensuring that all children are able to complete primary schooling (UNICEF, 2007a). In 1992, the Government of Ghana passed a constitution which provides the charter for universal education by mandating that education be free, compulsory, and available to all children (UNICEF, 2007a). Despite the no-fee tuition clause, many children are still not enrolled in primary schools due to the additional non-tuition fees to raise funds for school operations and activities (UNICEF, 2007a). To address these obstacles, the Government of Ghana adopted policies to operationalize their commitment to universal education. Two of the main policies include the Education Strategy Plan for 2003-2015 and the NSPS, which provides the framework for the Capitation Grant (School Fee Abolition) and Ghana Schooling Feeding Program (GSFP).

Capitation grants have been used in other countries as a demand-side intervention providing funds to schools to improve provision of services and increase access to services by eliminating fees paid by poor households (Akyeampong, 2011). In Ghana, the Capitation Grant was introduced in 2005. Grants are used by schools to support needy students, to provide in-service training, and to fund repairs and sports and cultural activities (Akyeampong, 2011). Evidence on the effectiveness of capitation grants in Ghana are mixed. Although capitation grants have increased enrollments in Ghana, the World Bank reported that capitation grants also increased dropout rates (World Bank, 2011b). Another study found that the capitation grants had no significant impact on education enrollment but did increase the number of trained teachers (Osei, Owusu, Asem, & Afutu-Kotey, 2009). To address school attendance and dropout rates, the Government of Ghana launched GSFP to improve the delivery of education services as well as to improve the nutritional status of students. Through the GSFP, eligible children aged 4-12 receive one meal for each day and deworming medication (UNICEF, 2007a).

4.3 Objective

This paper examined the impact of demand-side interventions on education outcomes in Ghana by evaluating the impact of an unconditional cash transfer program. Using difference-in-difference models we estimated the impact of the demand–side intervention (LEAP) on education. Our data came from the impact evaluation of the LEAP Program. The evaluation used a longitudinal, PSM design with data collected at baseline and 24 months after LEAP Program initiation.

This paper focused on education inputs and outcomes in order to understand the causal pathway through which the cash transfer operates. The model of human capital decision making was used for the selection of the key variables and outcomes (Strauss & Thomas, 2007). This model assumes that human capital is produced through the use of inputs such as time and purchased inputs. The demand for the inputs is a function of household preferences for

education, household income, and prices. Any shifts in the level of inputs are posited to drive changes in education outcomes. Additionally, cash transfers will lead to substitution and income effects that will affect in turn the demand for other goods. In theory, the effect of the cash transfer would lead to both a decrease in the cost of schooling and an increase in household income. If we consider schooling a normal good, the consumption of schooling will increase with income, which will increase the demand for schooling. The cash transfer also will induce a substitution effect, with decreases in leisure or time spent on work and increases in time spent in school. It is expected that the cash will increase the benefit of school relative to work, and as a result, children will spend more time in school and less time in work. For the scope of this paper, we focused primarily on the income effects of the cash transfer and do not examine substitution effects of schooling and labor.

4.4 Methods

Using PSM, a comparison group was matched based on a set of observable characteristics that are thought to influence eligibility for LEAP. PSM has been shown to work well under certain conditions when 1) there are numerous control variables to capture participation, 2) the same survey instrument is used for participants and nonparticipants, and 3) participants and nonparticipants are in the same labor market (Heckman, Hidehiko, & Petra, 1997). As these three conditions were met, the longitudinal PSM approach was employed to create a counterfactual group to compare to households receiving cash transfer and health insurance.

Baseline data were collected from future beneficiaries in three regions (Brong-Ahafo, Central, and Volta) who were part of a larger nationally representative sample of households surveyed as part of a research study conducted by ISSER and Yale University in the first quarter of 2010 (N=699). Subsequently, 699 households from the national ISSER survey were selected by PSM using one-to-one nearest neighbor approach to serve as a comparison group. The

matched comparison group was drawn from the same three regions as the LEAP households as well as adjacent regions that were thought to contain households facing similar agro-ecological conditions as the intervention group.

This comparison group of "matched" households (N=699) was re-interviewed after 24 months along with LEAP beneficiaries to measure changes in outcomes across treatment and comparison group. During implementation of the follow-up survey, an additional 215 households were interviewed at follow-up from the ISSER sample. These households had similar propensity scores to the LEAP households and resided in the same communities that were already being visited by the ISSER enumeration team and could be interviewed at low additional cost.

Table 4.1 shows the results of the PSM matching technique and presents the means of the final matched sample. In this table, we compared the mean characteristics of LEAP households with the respective matched sample. For comparison purposes, we also show means for the full ISSER rural sample to highlight the power of the PSM technique to select comparable households. For example, LEAP households had on average 0.44 children under the age of five compared to 0.73 in the full ISSER rural sample. The ISSER matched sample contained 0.45 children under the age of five resulting in a comparison group that has fewer children than the full ISSER rural sample. This pattern was the case for almost all other indicators shown in the table—the matching technique was able to select a sub-group of households that most resemble LEAP households, and thus can be used as a comparison group to assess program impacts.

The 699 treated and 699 matched comparison group households were subsequently re-interviewed in 2012. A total of 1,298 (out of 1,398) households were surveyed for a response rate of 92 percent. A further 215 households from the ISSER sample with propensity scores that were just below those scores of the matched sample and that resided in villages that were

already being visited were also re-interviewed. This process increased the statistical power of the study providing for a final longitudinal sample of 1,504 households (858 ISSER, 646 LEAP), as shown in Table 4.2.

The statistical approach we took to derive average treatment effects of LEAP was the difference-in-differences (DD) estimator. Two critical features of this design were particularly attractive for deriving unbiased program impacts. First, using pre- and post-treatment measures allowed us to difference out unmeasured fixed (i.e. time-invariant) characteristics of the family or individual which may affect outcomes, such as motivation, mental capacity or unobserved productivity. It also allowed us to benchmark the change in the indicator against its value in the absence of treatment. Second, using the change in a comparison group allowed us to account for general trends in the value of the outcome. The PSM approach within the context of the DD estimator has been shown to perform extremely well at replicating the experimental benchmark in social experiments (Heckman, Hidehiko, & Todd, 1997). Assessments of the PSM techniques in the context of cash transfer programs are quite positive and the necessary conditions were met in this study (Diaz & Handa, 2006; Handa & Mallucio, 2010)—data from the two samples were collected using the same survey instrument and field teams at the same time. As PSM uses observable characteristics, it does not control for endogeneity caused by unobserved characteristics (Shadish, et al., 2002). Using the DD model in combination with PSM will address endogeneity due to time-invariant unobserved characteristics.

As mentioned earlier, a further 215 households from the ISSER were re-interviewed and included in the final longitudinal sample of 1,504 households. Table 4.3 shows mean characteristics at baseline of the LEAP sample, the original matched ISSER sample, and the 215 additional households. Numbers in bold indicate statistically significant differences ($p<0.05$) between each group and LEAP participants. Few differences between the ISSER matched sample and LEAP were observed, and the additional households are somewhat less similar to

LEAP households as we would expect; had they been more similar, they would have been part of the matched sample.

The inverse probability weighting (IPW) technique used the propensity score for each household as a weight in the statistical analysis to reflect how similar it is to a LEAP household (that is, the higher the score, the more similar the household to a treated household on average, and the greater the weight) (Hirano, et al., 2003; Imbens & Wooldridge, 2009; Soares, et al., 2010; Wooldridge, 2007). The rightmost two columns of Table 4.3 show the weighted means for the original matched sample and the full ISSER sample that was interviewed at follow-up. With the weighting, the ISSER comparison group now appears to be slightly poorer than the LEAP group (per capita expenditure 48 Ghana Cedis versus 55 Ghana Cedis in LEAP) with older heads of households who are more likely to be female and widowed. Thus, the weighting provided for an additional way to adjust the comparison sample to make it more similar to LEAP. We employed the IPW technique in our analysis of program impacts using the full 914 households from the comparison sample.

4.5 Data sources and measurement

Data for this study was obtained from the 2010 ISSER nationally representative household socioeconomic panel survey and the follow-up survey implemented by the University of North Carolina at Chapel Hill (UNC) in 2012. The 2010 ISSER national socioeconomic survey consists of a random sample of 5,000 households with an additional 699 future LEAP households. The 2012 UNC follow up survey used the same interviewers and questionnaire as the 2010 ISSER national socioeconomic survey. As a result, variable definitions and other measurement issues are consistent across the samples and over time. The survey instrument for both data sources included detailed consumption expenditures, child development measures such as the Raven's Matrices test (Carpenter, et al., 1990), use of

preventive and curative health services, out-of-pocket health expenditures, school enrollment and attendance, and household income.

Our primary analytic sample consisted of 2,898 children aged 0 through 17 years. At baseline, the sample included 2,085 children. Of these children at baseline, 846 lived in LEAP households and 1,239 were from comparison group households. Of the LEAP children 399 (47 percent) were female. From the comparison households, 589 (48 percent) were female.

4.5.1 Dependent variables

The outcomes of interest were: 1) whether a child is currently enrolled in school; 2) whether a child missed any days of school in the reference period (absenteeism); and 3) whether a child ever repeated a grade. The mean outcomes for the different age groups are presented in Table 4.4. School enrollment was a binary indicator and is defined as "Did (Name) attend school / college at any time during the last 12 months?" Missed school was asked as, "How many hours of class did (Name) miss last week?" Repeat grade was asked as "Has (Name) ever repeated / did (Name) ever repeat a grade/level?"

4.5.2 Estimation strategy

A DD estimation strategy was used for measuring the impact of LEAP on education outcomes. We employed a linear probability model and applied clusters at the community level that accounts for correlation within communities. We also included household fixed effects to control for unobserved, time-invariant household differences.

Our basic estimation model is shown in equation (1):

$$Y_{it} = \alpha + \beta_1(2012)_{it} + \beta_2(T)_{it} + \beta_3(T * 2012)_{it} + \beta_4 X_{it} + \lambda_i + \varepsilon_{it} \quad (1)$$

In this framework, 2012 is a dummy (indicator) variable equal to 1 if the observation pertains to the post-intervention period (2012), T is a dummy variable if the observation receives the treatment, and the DD estimate of impact is given by β_3—the interaction between the two variables. The coefficient β_2 is a measure of the pre-treatment mean difference in Y between

treatment and comparison while β_1 measures general changes over time which will be important to control when outcomes are influenced by time trends. The X vector captures control at the household level as well as individual level. Variables at the household level include total household size and the age (in years), education (years completed), sex, and marital status of the household head since the head's characteristics are unbalanced across the ISSER and LEAP samples. At the individual level, we include age and sex of child to control for differential effects of gender and age. Household fixed effect are represented by λ and t and i indicate year of survey and individual observation, respectively. The unit of observation is at the individual level. As mentioned earlier, the regression is weighted using the IPW where LEAP observations are given a weight of 1. We also estimated equation (1) by different age groups of children and by sex.

Through the DD model, unobserved, time-invariant differences between the treatment group and comparison will be differenced out. Household fixed effects also will control for household and community specific differences that may influence school enrollment and other education outcomes. This approach is especially important for other time-invariant community-level factors, such as school distribution and school quality, as households are selected from different districts. The combination of the DD model and household fixed effects will allow to control for endogeneity at the household and group level that will provide a less biased estimator of the DD.

Model 1: We begin with a DD model where treatment is represented by LEAP status. This model provides the first approximation of the impact of LEAP. With this model, we do not account for any supply-side factors or other demand generation interventions that may also impact education outcomes, such as the GSFP feeding program.

Model 2: We also examine whether Model 1 holds true for children from households with lower expenditure. To test this, we use Model 1 and restrict the sample to children in households below the lower poverty threshold of 36 Ghana Cedis per capita per month at baseline and examine the treatment effects[5].

Model 3: To identify the differential effect of LEAP among children from poorer households, we create a binary variable to capture poor households (Poor) with expenditure below 36 Ghana Cedis at baseline. We add interaction terms between Poor and the LEAP intervention to Model 1. The model specification is shown as follows:

The empirical model is presented as follows:

$$Y_{it} = \beta_0 + \beta_1 2012_{it} + \beta_2 T_{it} + \beta_3 (T * 2012)_{it} + \beta_4 Poor_{it} + \beta_5 (Poor_{it} * 2012) + \beta_6 (T_{it} * Poor_{it}) + \beta_7 (T_{it} * Poor_{it} * 2012) + \beta_8 X_{it} + \lambda_i + \varepsilon_{it} \quad (2)$$

For this model, the coefficient β_7, the difference-in-difference-in-difference (DDD) estimate measures the effect of the intervention on the probability of the outcome among children from the poorest households compared with the probability of the outcome among children from the least poor households, relative to children living in comparison households. In essence, the DDD estimate takes the DD estimate for poor and subtracts DD estimate for non-poor, as presented below:

DDD=PoorDD−non-poorDD= (ΔYT-poor−ΔYC-poor)−(ΔYT-non-poor−ΔYC-non-poor) (3)

We employ Models 2 and 3, as both models offers different approaches to estimate the impact of the LEAP program for poor households. The advantage of Model 3 over Model 2 is that the same size is larger and will increase efficiency. However, in Model 3, we are forcing individual-level control variables to be constrained which may also explain some of the differences between the estimates for Models 2 and 3.

[5] The poverty line was developed by the Ghanaian Statistical Service and adjusted to 2010 figures.

4.6 Results

We provided impact estimates on three aspects of children's schooling: 1) whether a child is currently enrolled in school; 2) whether a child missed any days of school in the reference period; and 3) whether a child ever repeated a grade. One indicator (currently enrolled) is "good" and the remaining two indicators are reverse coded so that higher values are "bad". Consequently we looked for negative values of the DD for these three indicators and positive for enrollment. Overall, we found that the LEAP program impact preventing missed days and keeps children in school. The mean outcomes are presented in Table 4.4.

Impact of LEAP on children aged 5-17

Table 4.5 presents the DD impact estimates for the full sample of school-age children aged 5-17. In Model 1, the LEAP Program had an important impact on other dimensions of schooling reducing the likelihood of missing any school by 6 percentage points and reducing the chance of repeating a grade by 17 percentage points. On the other hand, in Model 1, the LEAP Program had a small positive impact on current enrollment (1 percentage point) but this was not statistically different from zero likely because primary school enrollment is nearly universal in Ghana.

We find the strongest impacts of the LEAP Program for poor households in Models 2 and 3. In Model 2, we restricted the sample to poor households to compare the impact of the LEAP Program among the poor. We found larger positive impacts of the LEAP Program when compared to other similar poor households from the comparison group. We also found that for this sample the LEAP Program reduced the likelihood of missing any school by 25 percentage points. When we examined whether there were any differential effects of the LEAP Program for the poor in Model 3, we found that the LEAP Program reduced the likelihood of missed days by 37 percentage points for children aged 5-17 in poor households compared to children in non-poor households, relative to children in comparison households. However in this model, we also

found that the LEAP Program increased the likelihood of repeating a grade by 17 percentage points for children aged 5-17 in poor households compared to children in non-poor households, relative to children in comparison households.

Impact of the LEAP Program on children aged 5-13

It is also important to examine the impacts of the LEAP Program during the transition between primary and secondary school, which occurs between age 12 or 13 depending on school starting age. For example the net enrollment rate is 97 percent for children aged 5-13, so it is instructive to investigate impacts of the LEAP Program among older and younger kids separately as the effects of the LEAP program on enrollment in particular are more probable at older ages.

Table 4.6 shows DD impacts for children aged 5-13. As expected the impact on enrollment was zero among this group for all the models. Results were similar to those results using the entire sample. We observe similar impacts in the three other aspects of schooling, though these are not as statistically strong as for the whole sample. Interesting results were also found when we examined the impact of the LEAP program on poor households in Models 2 and 3. In these models, we found similar results to those results in Table 4.6 in that the LEAP Program substantially decreases the likelihood of missed days. However, LEAP children in poor households were also 15 percentage points less likely to repeat a grade than similar children in poor households (row (2), column (3)), much stronger than those using the entire sample of children aged 5-17. In Model 3, we examine whether there is a differential effect of the LEAP by poverty. Results show that there were differences in program impact based on poverty. We found that LEAP children aged 5-13 of poor households are 40 percentage points less likely to miss days of school than other LEAP children of the same age in non-poor households. From Models 2 and 3, we found that the LEAP Program was very important in improving school attendance by reducing missed days for young children especially in poor households.

Impact of LEAP on children aged 13-17

Table 4.7 presents DD impact estimates for older children aged 13-17. Note that we included children age 13 in both groups because the transition from primary to secondary may vary depending on age of school entrance and may occur at slightly older ages among children with lower access to schooling. The results in Model 1 showed strong impacts of LEAP on repeating a grade, which was statistically different from zero. The impact on enrollment was 4 percentage points, although not statistically significant was comparable to recent impact estimates for South Africa's Child Support Grant (6 percentage points) (Samson et al. 2011) and Kenya's Cash Transfer for Orphans and Vulnerable Children (8 percentage points) (Kenya CT-OVC Evaluation Team 2012). Impacts of LEAP on other dimensions of schooling were equally impressive. For example, there was a decrease of 22 percentage points on the likelihood of repeating a grade.

Among poor households, we again found substantial positive impacts of the LEAP Program for missed days and enrollment. In Model 2, the LEAP Program substantially decreased the chances of missing school by 21 percentage points. In Model 3, we also found very positive results of LEAP on decreasing the likelihood of missing any school with a 29 percentage point decrease in the chance of missing any school for children aged 13-17 in poor LEAP households compared to children in non-poor LEAP households. When we further examined subsequent grade repetition, we found that for both Models 2 and 3 the LEAP Program increased the likelihood repeating a grade; however, this result may be more a function of poverty than due to LEAP. Despite the fact that children in poorer households were repeating grades, results showed that children from poor households were enrolled in school and missed fewer days of school. As universal education in Ghana only covers primary school, these results were important in showing that the LEAP Program can help the transition from primary to secondary schools.

Impact of LEAP by gender

We investigated whether program effects differ by gender. Previous evaluation studies of cash transfer programs have found heterogeneous treatment effects by gender. Programs may have different effects by gender due to household preferences where households may choose to invest more in boys than girls or may be due to differences in outcomes (Schultz, 2004; E Skoufias & Parker, 2001). For example, girls may have substantially lower school enrollment and may show larger impacts because the gap between boys and girls is so large. There appeared to be gender-differentiated impact of LEAP, especially in the progression of schooling as evidence by the impact of LEAP on repeating grades among boys and girls. In Table 4.8, we show that the LEAP Program for girls in the poor households increased their likelihood of repeating a grade. Whereas for boys in poor households, we found that LEAP decreased the likelihood of repeating a grade in Model 2. From the results of the stratified samples by gender, we found that for females the effect of LEAP improved access and enrollment among those who were already enrolled in school. For males, LEAP affected access, enrollment, and progression. However, it was unclear whether there are systematic benefits for one sex over the other.

Conditionalities

To examine whether the behavior changes and positive impacts on education were driven by an income effect of the cash transfer or other factors such as perceived conditions, we explored the issue of conditionalities and the effect of perceived conditions on the impact of the LEAP Program on education. Evidence from Mexico and Ecuador has shown that households that did not think that the cash transfer program was conditional had education outcomes that were lower than those households that thought there were no conditions must be met in order to receive the cash transfers (de Brauw & Hoddinott, 2011; Schady & Araujo, 2008).

From the operational module in the 2012 survey, respondents were asked questions regarding whether they believed if the households participating in the LEAP Program had to

meet any conditions in order to receive payments. Of the 546 households receiving LEAP payments and completing the operations module, 83 percent believed that households did not have to follow any rules or conditions, 13 percent indicated that there are rules or conditions, and 4 percent did not know. Among those who believed there were conditions, the most frequently reported conditions were NHIS and school enrollment of children. In light of this, the relevant question is whether perceived conditions may explain the impact of the LEAP Program taking into account the already low level of transfer amount as well as irregularity of payments. However, as the number of conditioned households was a small percentage of total LEAP households, it does not appear that there were operational issues related to information on conditions.

To test the robustness of our model to conditionalities, we examined the impact of the LEAP Program for households by dropping the LEAP households that believed there were conditions. This eliminated 224 observations that represented only 6 percent of the final analytical sample of children aged 5 to 17. We compared means for LEAP households, LEAP households that do not believe there are conditionalities (unconditioned), and LEAP households that believe there are conditionalities (conditioned). LEAP households that did not know whether there were any conditions were categorized as unconditioned.

In Table 4.9, we compared the impact of the LEAP Program for two different specifications of our DD model in equation (1). In row (1), we present again the results of Model 1 to assist in the comparison. We proceeded to drop the conditioned LEAP households. In this model, our treatment group consisted of only unconditioned LEAP households, and our comparison group consisted of children from household in the full sample of PSM matched comparison households. These results are presented in row (2) of Table 4.9. When we used only unconditioned households for the treatment group, we found similar results for enrollment and repeating grades as in Model 1. For the outcome, missed any days of school, we

found that LEAP decreases the likelihood of missed days by 4 percentage points as compared to a decrease of 6 percentage points in Model 1. In this simple comparison between these two LEAP treatment samples, the results suggested that the households that are conditioned have very little impact on education outcomes of children. This may be due to the few number of households that believed there were conditions.

4.7 Discussion

We were able to assess the overall effectiveness of the LEAP Program on education outcomes for children in Ghana. We assessed LEAP to examine how the program affects different aspects of children's schooling to increase demand and access to education for school aged children. Our results showed that the LEAP Program has significant positive impacts on preventing absenteeism (missed days) and keeping children in school. We also examined whether there was heterogeneity of program impacts based on poverty and gender. We found distinct gender-differentiated impact of LEAP on children and found more pronounced positive impact of LEAP on the different dimensions of schooling among poor households. A brief discussion of some of the key points is presented below.

A number of limitations of our analysis deserve discussion. First, measures of schooling outcomes are self-reported that may represent a reporting bias. A study in Malawi found that with self-reported data on school outcomes the comparison group reported better outcomes than reality that would result in a underestimation of the true program impacts (Baird & Ozler, 2012). If this phenomenon is also the case for Ghana, we may expect a downward bias on the impacts of LEAP. To address self-reporting bias, a check would be to compare self-reported measures to other measures available. However, this process would be an expensive and time-consuming solution to address reporting bias. For this analysis, we do not expect there to be reporting bias as the LEAP Program is unconditional and there is no active monitoring process being implemented by LEAP.

Another limitation of this study was that we do not control for concurrent supply-side programs in Ghana. Although unconditional cash transfer programs are not dependent on supply-side interventions, the provision of supply-side investments is still needed to complement these demand interventions to improve the education of children. It is recommended that community level variables be used to control for availability and access of services in the different communities. Additionally, as supply-side interventions were being implemented during the time of the study, our estimates of the LEAP Program may be less efficient in that they may capture some of the effects of ongoing supply-side interventions. To provide a more efficient estimate of the impact of the LEAP Program, we attempted to isolate the impacts of supply-side factors by adding supply-side control variables. A commonly used variable to measure the distribution of schools (school supply) is distance to schooling as the only way to decrease distance to schools is to increase the number of schools (Schultz, 2004). Distance to schooling is useful as it also captures the geographic distribution of schools. For this study, data on the distance to schools was unavailable. We attempted to use time traveled to school as a proxy for distance to schooling. We found that there were potential data measurement issues for this measure especially for secondary school aged children as many of the students may be in boarding schools. In addition, there were a large number of missing observations due to the setup of the survey questionnaire skip patterns. However, we believe that household fixed effects will control for time-invariant, heterogeneous community factors.

Operational issues of the LEAP Program that occurred during the implementation of the study may have impacted results. The first issue with the LEAP payments is the overall low value of the transfer. In Ghana, the LEAP transfer level of about 7 percent of consumption much lower that other successful cash transfer programs (Scott Stewart & Handa, 2008; UNICEF, 2008). The second issue is that the LEAP cash transfer payments were not only extremely low by international standards but the payments themselves have been highly irregular. Figure 4.1

shows the payment of LEAP transfers during the period of this assessment. LEAP households did not receive a steady flow of predictable cash with which to smooth their consumption. The second issue with the LEAP payments was the overall low value of the transfer. In Ghana, the LEAP transfer level of about 7 percent of consumption was among the lowest when compared to other successful cash transfer programs where transfers were at least 20 percent of consumption to beneficiaries (Figure 4.2).

We would expect that these operational issues would result in underestimation of the impact of the LEAP Program, as the relationship between these indicators and total household spending was strong among LEAP households. For example, we would expect that the impacts would rise if the value of the LEAP transfer were increased and transfers were delivered in a timely and consistent manner.

In theory, unconditional cash transfers could be used to improve education outcomes by reducing the out-of-pockets costs for schooling and to make up for lost income due to children spending more time in school. Based on the results, there does not appear to be a demand problem for schooling as evidenced by the very high enrollment rates. As a result, we found the LEAP Program had very little impact on early school enrollment primarily due to the fact that Ghana has universal primary schooling. However, for secondary school aged children (aged 13-17), the LEAP Program had significant positive impacts on preventing absenteeism and keeping children in school. As the LEAP Program is unconditional, this behavioral response may be representative of changes in household behavior induced by the income effect of the cash transfer and increased demand for schooling at the secondary level. However, due to the low transfer amount of the transfer as well as the irregularity in payments, it is difficult to conclude that these behavior changes were due to the income effect.

When comparing the results by gender, there appeared to be a distinct gender-differentiated impact of LEAP on children, but it is unclear whether there are systematic

benefits for one gender over the other. We found that impacts on certain dimensions of schooling, such as absenteeism were stronger for males, but the impacts were stronger for girls in reducing repeating grades. However, there was not enough evidence to decipher whether there were any gender preferences in these households that may result in differences in education outcomes by gender.

We also examined whether there were any differential effects based on poverty. As the LEAP Program targets poor households, it is important to better understand whether treatment effects vary based on poverty. When we compared the impact of the LEAP Program among poor households, we found more pronounced positive impact of LEAP on the different dimensions of schooling. When we compared the poorest of the LEAP households to other LEAP households in Model 2, we found similar positive impacts on education. For poor households, it appeared that the cash transfer is benefiting the more vulnerable younger members of the household especially in education outcomes. More importantly, we found that LEAP decreased absenteeism during the transition between primary and secondary school, as well as increased enrollment and attendance for secondary school aged children. In sum, these results support that the cash transfer does induce income effects that increase the demand for schooling at all schooling levels especially for children of poor households. However, we did not examine whether there were also substitution effects induced by the cash transfer, and we recommend that future studies examine the impact of the LEAP Program on labor outcomes to better understand whether the cash transfer increase the benefit of school relative to work for poor households.

We explored whether the behavior changes and positive impacts on education were driven by income effect of the cash or other factors such as perceived conditions. From our results, we found that for our analysis conditioned LEAP households did not affect the impact of the LEAP Program. One reason may be that there were very few conditioned LEAP households.

4.8 Conclusion

As the cornerstone of the National Social Protection Strategy, the LEAP Program is essential to protect the social development of poor and vulnerable households in Ghana. The overall results indicate that the LEAP Program has positive impacts on children's access to schooling. LEAP increased access to schooling at the secondary level, and at both primary and secondary levels improved the quality of access with fewer days missed and less grade repetition. The magnitude of some of these impacts was in the same range as for other large-scale programs in Africa (Kenya CT-OVC Evaluation Team, 2012; Samson, et al., 2010). These results show that the LEAP Program is a critical component of the National Social Protection Strategy and is essential to increase access to education services among poor and vulnerable households in Ghana.

4.9 Tables and Figures

Table 4.1: Characteristics before and after matching

	LEAP	ISSER Rural	ISSER matched sample
Demographics			
Household size	3.83	**4.12**	3.69
Children under 5	0.44	**0.73**	0.45
Children 6-12	0.77	0.84	0.76
Children 13-17	0.54	**0.47**	0.50
Elderly (>64)	0.76	**0.31**	**0.65**
Number of orphans	0.62	**0.15**	**0.34**
Orphan in household	0.27	**0.09**	**0.19**
NHIS	0.64	**0.44**	**0.58**
Head characteristics			
Female head	0.59	**0.28**	0.54
Age of head	60.92	**49.12**	59.42
Widowed	0.39	**0.13**	**0.30**
Head schooling	0.30	**0.57**	**0.47**
Household characteristics			
No kitchen	0.09	**0.03**	0.07
No toilet	0.31	**0.37**	0.31
Pit latrine	0.38	**0.46**	0.42
Thatch roof	0.31	**0.20**	**0.23**
Shared dwelling	0.29	**0.24**	0.27
Exclusive kitchen	0.31	**0.58**	**0.38**
Unprotected water source	0.21	**0.24**	0.23
Per capita spending	55.46	**67.05**	**60.06**
Livestock owned	0.41	**0.57**	0.44
	N=699	N=3136	N=699

Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-Per capita spending is presented in Ghana Cedis.
-ISSER PSM represents the 699 comparison group households matched using PSM.

Table 4.2: Sample sizes for LEAP Impact Evaluation (Number of households)

	2010	2012
LEAP	699	646
ISSER Samples		
Matched	699	643
Unmatched	215	215
Total longitudinal sample		1,504

Table 4.3: Mean baseline characteristics LEAP and ISSER samples

		Unweighted		Weighted	
Indicator Variables	**LEAP**	**ISSER PSM**	**ISSER Extra**	**ISSER PSM**	**ISSER Final**
Demographics					
Household size	3.83	3.69	3.98	3.99	3.99
Children under 5	0.44	0.45	**0.70**	0.40	0.40
Children 6-12	0.77	0.76	0.84	0.81	0.82
Children 13-17	0.54	0.50	0.50	**0.64**	**0.63**
Elderly (>64)	0.76	**0.65**	**0.24**	**1.03**	**0.78**
Number of orphans	0.62	**0.34**	**0.14**	0.50	**0.48**
Orphan in household	0.27	**0.19**	**0.08**	0.30	0.30
NHIS	0.64	**0.58**	0.57	0.66	0.66
Head characteristics					
Female head	0.59	0.54	**0.37**	**0.65**	**0.64**
Age of head	60.92	59.42	**48.57**	**67.19**	**66.37**
Widowed	0.39	**0.30**	**0.13**	**0.46**	**0.44**
Head schooling	0.30	**0.47**	**0.61**	0.33	0.34
Household characteristics					
No kitchen	0.09	0.07	**0.05**	0.10	0.10
No toilet	0.31	0.31	0.30	0.31	0.31
Pit latrine	0.38	0.42	0.47	0.37	0.38
Thatch roof	0.31	**0.23**	0.24	0.30	0.30
Shared dwelling	0.29	0.27	**0.20**	0.32	0.31
Exclusive kitchen	0.31	**0.38**	**0.50**	0.31	0.32
Unprotected water	0.21	0.23	0.21	0.20	0.20
Per capita spending	55.46	**60.06**	**61.09**	**48.47**	**48.99**
Livestock owned	0.41	0.44	0.44	0.41	0.41
Propensity score	0.52	0.38	0.12	0.63	0.60
	N=699	N=699	N=215	N=699	N=914

Bold indicates statistical significant difference between LEAP sample and other groups at 5 percent.
-Per capita spending is presented in Ghana Cedis.
-ISSER PSM represents the 699 comparison group households matched using PSM.
-ISSER Extra represents the additional 215 households from the ISSER sample re-interviewed in 2012.
-ISSER Final represents the final 914 comparison group households (699+215).

Table 4.4: Means of outcomes by sample

	LEAP		ISSER PSM	
	2010	2012	2010	2012
Children 5-17				
Missed any school	0.26	0.02	0.16	0.05
Currently enrolled	0.93	0.96	0.95	0.94
Ever repeat grade	0.23	0.14	0.11	0.11
Children 5-13				
Missed any school	0.28	0.02	0.16	0.05
Currently enrolled	0.97	0.97	0.98	0.96
Ever repeat grade	0.20	0.11	0.10	0.07
Children 14-17				
Missed any school	0.22	0.12	0.14	0.05
Currently enrolled	0.84	0.91	0.89	0.87
Ever repeat grade	0.35	0.22	0.12	0.21
Girls 5-17				
Missed any school	0.24	0.02	0.18	0.08
Currently enrolled	0.93	0.94	0.94	0.92
Ever repeat grade	0.23	0.11	0.10	0.10
Boys 5-17				
Missed any school	0.28	0.02	0.14	0.03
Currently enrolled	0.92	0.97	0.96	0.95
Ever repeat grade	0.24	0.16	0.11	0.12
Children 5-17 (Cond=0)				
Missed any school	0.24	0.02	0.18	0.08
Currently enrolled	0.93	0.94	0.94	0.92
Ever repeat grade	0.23	0.11	0.10	0.10

Table 4.5: Impact of LEAP for children aged 5-17

	(1) Missed any school	(2) Currently enrolled	(3) Ever repeat grade
1) Model 1:DD	**-0.06**	0.01	**-0.17**
	(3.02)	(0.57)	(5.74)
	(N=3329)	(N=3558)	(N=2933)
2) Model 2: DD	**-0.25**	0.02	0.02
poor sample only)	(7.65)	(0.75)	(0.46)
	(N=1589)	(N=1708)	(N=1370)
3) Model 3: DDD	**-0.37**	0.05	**0.17**
(w/poor interaction)	(6.76)	(1.29)	(2.26)
	(N=3329)	(N=3558)	(N=2933)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Table 4.6: Impact of LEAP for children aged 5-13

	(1) Missed any school	(2) Currently enrolled	(3) Ever repeat grade
1) Model 1:DD	-0.04	-0.01	**-0.16**
	(1.32)	(1.08)	(3.85)
	(N=2355)	(N=2443)	(N=1912)
2) Model 2: DD	**-0.27**	0.02	**-0.15**
(poor sample only)	(5.81)	(0.91)	(2.23)
	(N=1151)	1200	(N=908)
3) Model 3: DDD	**-0.40**	0.05	0.05
(w/poor interaction)	(5.74)	(1.69)	(0.53)
	(N=2355)	(N=2443)	(N=1912)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Table 4.7: Impact of LEAP for children aged 13-17

	(1) Missed any school	(2) Currently enrolled	(3) Ever repeat grade
1) Model 1:DD	-0.05	0.04	**-0.22**
	(1.36)	(1.43)	(3.72)
	(N=1240)	(N=1391)	(N=1293)
2) Model 2: DD	**-0.21**	0.08	0.13
(poor sample only)	(3.26)	(1.65)	(1.26)
	(N=554)	(N=632)	(N=581)
3) Model 3: DDD	**-0.29**	0.11	**0.35**
(w/poor interaction)	(2.88)	(1.40)	(2.37)
	(N=1240)	(N=1391)	(N=1293)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Table 4.8: Impact of LEAP by gender for children aged 5-17

	(1) Missed any school	(2) Currently enrolled	(3) Ever repeat grade
Girls aged 5-17			
1) Model 1:DD	-0.06	0.01	**-0.18**
	(1.87)	(0.34)	(3.59)
	(N=1559)	(N=1675)	(N=1362)
2) Model 2: DD	**-0.28**	0.03	**0.17**
(poor sample only)	(5.54)	(0.93)	(2.24)
	(N=727	(N=792)	(N=625)
3) Model 3: DDD	**-0.36**	0.04	**0.29**
(w/poor interaction)	(4.22)	(0.77)	(2.21)
	(N=1559)	(N=1675)	(N=1362)
Boys aged 5-17			
1) Model 1:DD	**-0.08**	0.03	**-0.14**
	(2.45)	(1.65)	(3.41)
	(N=1770)	(N=1883)	(N=1571)
2) Model 2: DD	**-0.24**	0.03	**-0.17**
(poor sample only)	(4.30)	(1.05)	(2.38)
	(N=862)	(N=916)	(N=745)
3) Model 3: DDD	**-0.38**	0.08	0.07
(w/poor interaction)	(4.72)	(1.50)	(0.66)
	(N=1770)	(N=1883)	(N=1571)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

Table 4.9: Impact of LEAP and conditionalities for children aged 5-17

	(1) Missed any school	(2) Currently enrolled	(3) Ever repeat grade
1) Model 1:DD	**-0.06**	0.01	**-0.17**
	(3.02)	(0.57)	(5.74)
	(N=3329)	(N=3558)	(N=2933)
2) Model 4: DD*	-0.04	0.01	**-0.17**
	(1.93)	(0.54)	(5.59)
	(N=3263)	(N=3486)	(N=2869)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.
*Sample excludes LEAP households that believe that there are conditions.

Figure 4.1: LEAP payment frequency

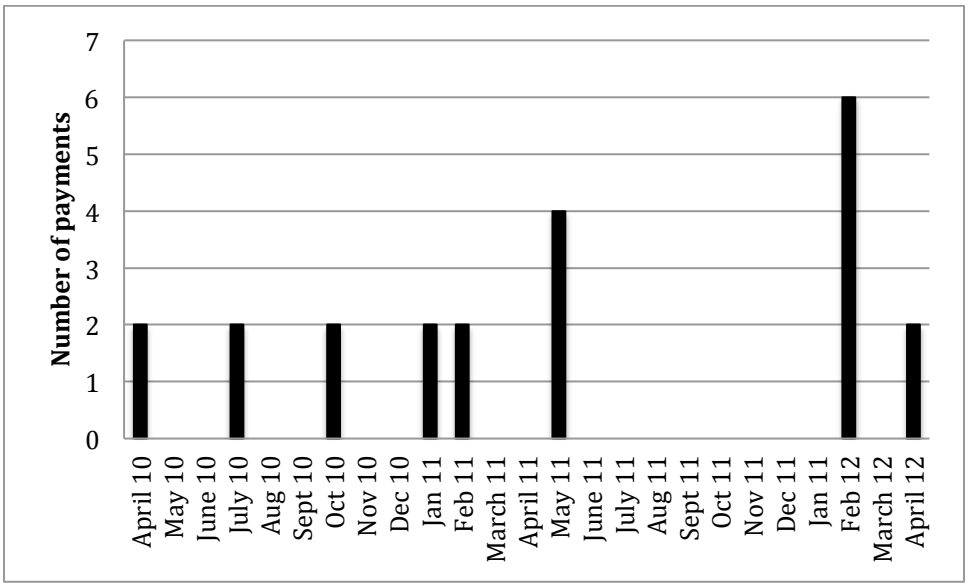
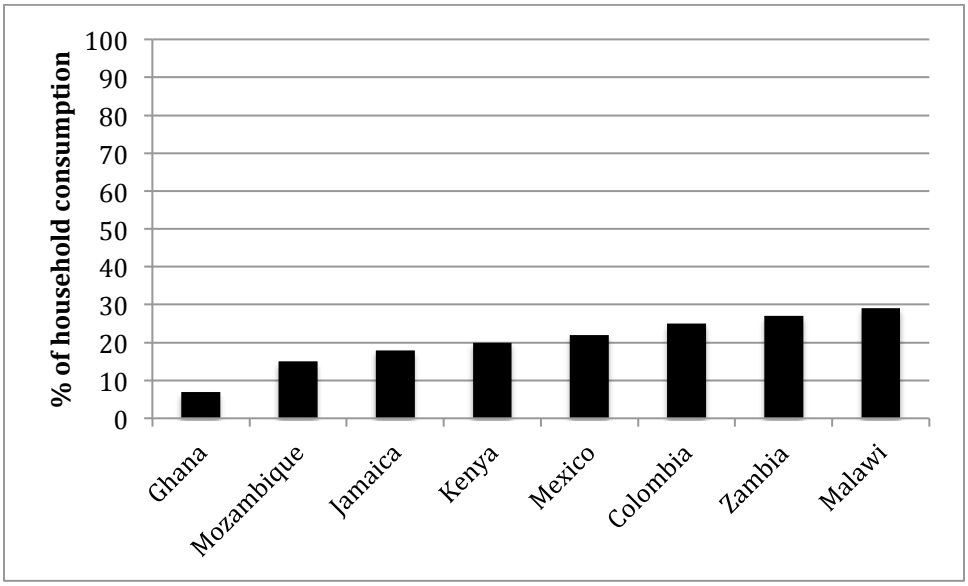


Figure 4.2: Transfer as a share of household consumption



CHAPTER 5: CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Summary and synthesis of findings

The overall objective of this dissertation was to analyze the impact of the LEAP Program on education and health of children in Ghana. To our knowledge, this dissertation was the first paper to study the efficiency of the targeting scheme of the LEAP Program. This dissertation is novel in that it was the first study to provide a rigorous comparison of the impact of cash transfers versus health insurance on health outcomes. In addition, this dissertation provides further insight into the potential impact of unconditional cash transfers on education in sub-Saharan Africa.

The first paper examined the efficiency of the targeting scheme of the LEAP Program in Ghana. In terms of operations, it appeared that the LEAP targeting scheme was successful using the current eligibility criteria, and that the hybrid of categorical targeting, community-based targeting and proxy means tests used in the LEAP targeting scheme was effective in reaching the poorest and most vulnerable households in Ghana. Although LEAP targets poverty, the comparisons suggest that the eligibility criteria may select a very different group of beneficiaries than the average rural poor household and targets the most vulnerable populations among the poor. This finding supports the importance of the community-based targeting component of the LEAP targeting scheme in identifying the most vulnerable in the community. In addition, results point to the strength of the categorical targeting, community-based targeting and proxy means tests combination targeting system. If the LEAP targeting only used proxy means tests, these households may not have been identified as potential LEAP beneficiaries based solely on income.

To assess the overall impact of the LEAP Program on health, we assessed the relative merits of cash transfers versus health insurance. By exploiting the variation in NHIS coverage among LEAP beneficiaries brought about by administrative bottlenecks in implementation, as well as the variation in NHIS coverage among the matched comparison group, we were able to assess the impact of cash transfers versus health insurance on health outcomes at the household level and individual (child) level. For the cash transfer component of LEAP, we note that the apparent negative impact of the cash transfer was more than offset by the positive impact of the NHIS component of LEAP on health care use, which implied an overall net increase in utilization. This accounting plus the aggressive expansion of NHIS among LEAP households suggests that access to health care has increased significantly among the poor in rural Ghana.

This dissertation also examined the impact of demand-side interventions on education outcomes in Ghana by evaluating the impact of an unconditional cash transfer program. Results from this dissertation indicated that the LEAP Program had positive impacts on children's access to schooling. LEAP increased access to schooling at the secondary level, and at both primary and secondary levels, it improved the quality of access with fewer days missed and less grade repetition. For poor households, it appeared that the cash transfer benefited the more vulnerable younger members of the household especially in education outcomes. More importantly, we found that LEAP decreased absenteeism during the transition between primary and secondary school, as well as increased enrollment and attendance for secondary school-aged children. In conclusion, these results support that the cash transfer does induce income effects which increase the demand for schooling at all schooling levels especially for children of poor households. The magnitude of some of these impacts is in the same range as for other large-scale programs in Africa as discussed in Chapters 3 and 4.

5.2 Policy implications

The study results have significant policy implications. Targeting is an essential component in the design and implementation of cash transfer programs. In countries with limited resources, targeting strategies of social programs are crucial both to addressing sustainability and inequality of programs. Efficient targeting of programs can help to maximize the impact on poverty by reaching the most vulnerable and poor. Numerous targeting schemes are used in social protection programs in developing countries. As targeting schemes are highly reliant on financial resources and administrative capacity, this paper does not assess whether other targeting schemes are more effective. This paper presents quantitative evidence on targeting performance of the LEAP Program in Ghana that used a hybrid-targeting scheme combining categorical targeting, community-based targeting, and proxy means tests to select participants. Findings from this paper will allow policy makers in SSA to better understand how the LEAP Program captures poor households as well as the vulnerable. Results show that hybrid targeting used in the LEAP targeting scheme is effective in reaching the poorest and most vulnerable households in Ghana.

This dissertation also supports the discussion on developing poverty alleviation policies to improve health. Although it is difficult to make strong conclusions about the relative merits of cash transfers versus health insurance on healthcare utilization from this study, the impact of the LEAP Program is driven by LEAP's provision of health insurance and the price and income effect of health insurance and not from the income effect of the unconditional cash transfer. These results show that NHIS is a critical component of the LEAP Program, and that the comprehensive LEAP Program of cash and health insurance increases access to health services among poor and vulnerable households.

There is a growing debate on whether perceived conditions affect the impact of unconditional cash transfer programs. Evidence from Mexico and Ecuador has shown that

households that believed that there were no conditions had education outcomes that were lower than those households that thought there were conditions (de Brauw & Hoddinott, 2011; Schady & Araujo, 2008). As the LEAP Program is unconditional, the impact of the LEAP Program on the behavioral response may be representative of changes in household behavior induced by the income effect of the cash transfer and increased demand for schooling and health. However, due to the low transfer amount of the transfer as well as the irregularity in payments, it is difficult to conclude that these behavior changes are due to the income effect. To examine whether the behavior changes and positive impacts on education are driven by income effect of the cash or other factors such as perceived conditions, this dissertation explored the issue of conditionalities and the effect of perceived conditions on the impact of the LEAP Program on education. Results suggest that conditioned LEAP households did not affect the impact of the LEAP Program. Although it is difficult to conclude that perceived conditions were not driving the changes that we found in this study, these results can help to lead future research examining the effect of perceived conditions on the true impact of the LEAP Program.

For education and health outcomes, results pointed to a differential effect of the programs by gender. When comparing the impact of the LEAP Program for the different samples of children, we find gender-differentiated impacts of the two programs on health and education and that the effect for children is in fact driven by girls. These results suggest that the LEAP Program can serve as a means to improve adolescent reproductive and child health for females as well as improving female educational attainment. However, further investigation is needed to get to the root of why there is a differential effect. The results of this dissertation may be of interest to stakeholders and policy makers involved in developing policy or programs aimed at enhancing educational attainment as well as improving the health of young females.

5.3 Limitations

There are methodological limitations from this dissertation that warrant mention. First, measures of schooling outcomes are self-reported and may represent a reporting bias. A study in Malawi found that with self-reported data on school outcomes the comparison group reported better outcomes than reality and would result in a underestimation of the true program impacts (Baird & Ozler, 2012). If this is also the case for Ghana, we may expect a downward bias on the impacts of LEAP. To address self-reporting bias, a check would be to compare self-reported measures to other measures available. However, this process would be an expensive and time-consuming solution to address reporting bias. For this analysis, it is not expected there to be reporting bias as the LEAP Program is unconditional and there is no active monitoring process being implemented by LEAP.

There are also potential endogeneity issues related to the selection into NHIS. Although, we believe that with the use of PSM, DD models, and household fixed effects addressing most of these concerns. If the selection into NHIS is due to unobserved, time varying factors, the DD model will not properly address endogeneity and estimates will most likely be biased.

Another limitation of this study is that we do not control for concurrent supply-side programs in Ghana. Although unconditional cash transfer programs are not dependent on supply-side interventions, the provision of supply-side investments is still needed to complement these demand interventions to improve the education of children. Additionally, as supply-side interventions were being implemented during the time of the study, estimates of the LEAP Program may be less efficient, in that they may capture some of the effects of ongoing supply-side interventions. To provide a more efficient estimate of the impact of the LEAP Program, we attempted to isolate the impacts of supply-side factors by adding supply-side control variables. However, data limitations prevented effective use of these variables. We

believe, however, that household fixed effects controlled for time-invariant heterogeneous community factors.

Another limitation of the study is that we did not examine the spillover effects of the LEAP Program for non-beneficiary households. However, we do not believe that there are significant spillover effects, as the penetration of the LEAP Program in communities is still small (10 percent) and the level of transfer amounts is relatively low. However, we recommend that future studies examine the impact of the LEAP Program on the local economy to see if there is an impact of local demand of goods as well as prices.

There were also operational problems of the LEAP Program that occurred during the implementation of the study that may impact results. The first issue with the LEAP payments is the overall low value of the transfer. In Ghana, the LEAP transfer level of about 7 percent of consumption much lower that other successful cash transfer programs (Scott Stewart & Handa, 2008; UNICEF, 2008). The second issue is that the LEAP cash transfer payments were not only extremely low by international standards but the payments themselves have been highly irregular. Thus, LEAP households did not receive a steady flow of predictable cash with which to smooth their consumption. We expect that these operational issues would result in underestimation of the impact of the LEAP Program as the relationship between these indicators and total household spending is strong among LEAP households. For example, the impacts would most likely rise if the value of the LEAP transfer were increased and transfers were delivered in a timely and consistent manner.

5.4 Future research

Additional research on the LEAP Program is still needed to understand the causal pathways through which the LEAP program influences health and education outcomes of children. In our findings, we found that there were gender-differentiated effects of the LEAP Program on health and education outcomes for children. However, we were unable to

distinguish the systematic benefits or mechanisms of these differentiated effects. Based on these results, further investigation is recommended to determine why there is a differential effect. Future research also is recommended to explore whether the impact of the unconditional cash transfer programs is driven by income effect of the transfer or by changes in household behavior. With the low transfer amount as well as the irregularity in payments of the LEAP Program, it was difficult to conclude that these behavior changes were due to the income effect of the cash transfer. Thus, it is recommended that further research distinguish whether impacts are due to income effects or behavior changes induced by participation in the program.

5.5 Conclusions

Despite these limitations, we were able to assess the overall effectiveness of the LEAP Program on health and education outcomes for children in Ghana. As the cornerstone of the National Social Protection Strategy, the LEAP Program is essential to protect the social development of poor and vulnerable households in Ghana. These results show that the LEAP Program is a critical component of the National Social Protection Strategy and is essential to increase access to health and education services among poor and vulnerable households in Ghana. Results will support policy discussion on unconditional cash transfer programs and aid in the design of similar programs elsewhere in Africa.

APPENDIX

In the analysis of the impact of the cash component and health insurance on health outcomes, we attempted to estimate the pure NHIS effect by using only the ISSER sample. Within the ISSER sample, we identified two groups, one that has never received NHIS at either point in time, and the other that does not have NHIS at baseline but does at follow-up. We employ a standard DD model with NHIS as the treatment. The key limitation of this model was that we did not know the exact date that households enrolled in NHIS between baseline and follow-up. In this model (Model 4), there were possible sample selection issues as we restricted the sample to households that had NHIS at baseline. There may be sample selection bias as the dependent variable was observed for this restricted nonrandom sample. This sample selection problem can be addressed by including the LEAP and ISSER matched households from the analytical sample. By not restricting the sample by NHIS enrollment, we have avoided the sample selection problem. However, there will now be endogeneity concerns that can be addressed through the fixed effects and DD model if selection into NHIS is due to unobserved, time-invariant factors.

To identify the differential effect of the cash component of LEAP and health insurance, we created a binary variable to capture households (NHIS) that were enrolled in health insurance. We added interaction terms between NHIS and the LEAP intervention to Model 1 to identify the differential effect of LEAP among households with and without health insurance. The model specification is shown as follows:

$$(1) \quad \begin{aligned} Y_{it} &= \beta_0 + \beta_1 LEAP + \beta_2 NHIS + \beta_3 2012 + \beta_4 (LEAP * 2012) + \beta_5 (NHIS * 2012) \\ &+ \beta_6 (LEAP * NHIS) + \beta_7 (LEAP * NHIS * 2012) + \beta_8 X_i + \beta_9 Z_i + \lambda_i + \varepsilon_{it} \end{aligned}$$

In this framework 2012 is a dummy (indicator) variable equal to 1 if the observation pertains to the post-intervention period (2012), LEAP is a dummy variable if the observation receives the treatment (LEAP), and the DD estimate of impact is given by β_4—the interaction

between the two variables. The X vector captures control variables at the household level as well as individual level. Control variables at the household level include total household size and the age (in years), education (years completed) sex and marital status of the household head, since the head's characteristics are unbalanced across the ISSER and LEAP samples. At the individual level, we include age and gender of child to control for differential effects. Household fixed effect is represented by λ and t and i indicate year of survey and individual observation respectively.

For this model, the coefficient β_7, the difference-in-difference-in-difference (DDD) estimate measures the effect of the intervention on the probability of the outcome among children from the LEAP households and NHIS compared with the probability of the outcome among children from the households with only NHIS, relative to children living in comparison households. The illustration of the DDD estimator is presented in Table A.1. The coefficients of interest are β_4 and β_7. If the coefficient β_7 is not significant, we can conclude that there was no differential effect of LEAP by NHIS enrollment, in this case the impact of the LEAP Program is captured by the DD estimated of LEAP, coefficient β_4. In Table A.2, we present the results the DDD model at the individual-level. From these results, we found that the LEAP Program did not impact health outcomes of children aged 5-17 regardless of NHIS enrollment.

Table A.1: Illustration of DDD estimator

	Baseline (Year 2010=1)	**Follow-up** (Year 2012=1))	**Key Coefficient (s)** (col2-col1)
LEAP group: LEAP=1			
1.LEAP with NHIS	$\beta_0+\beta_1+\beta_2+\beta_6+\beta_8+\beta_9$	$\beta_0+\beta_1+\beta_2+\beta_3+\beta_4+\beta_5+\beta_6+\beta_7+\beta_8+\beta_9$	$\beta_3+\beta_4+\beta_5+\beta_7$
2. LEAP without NHIS	$\beta_0+\beta_1+\beta_8+\beta_9$	$\beta_0+\beta_1+\beta_3+\beta_4+\beta_8+\beta_9$	$B_3+\beta_4$
4. Impact of NHIS in those with LEAP= (row 2 – row 1)			**$\beta_5+\beta_7$**
Non-LEAP group: LEAP=0			
5. Comparison household with NHIS	$\beta_0+\beta_2+\beta_8+\beta_9$	$\beta_0+\beta_2+\beta_3+\beta_5+\beta_8+\beta_9$	$\beta_3+\beta_5$
6. Comparison household without NHIS	$\beta_0+\beta_8+\beta_9$	$\beta_0+\beta_3+\beta_8+\beta_9$	β_3
7. Impact of NHIS on those without LEAP = (row 4 – row 3)			**β_5**
8. Impact of LEAP for those with NHIS= (row 1 – row 5)			**$\beta_4+\beta_7$**
9. Impact of LEAP for those without NHIS= (row 2 – row 6)			**β_4**
DDD estimate:		**(row8-row9)=**	**B_7**

Table A.2: Impact of LEAP for children with and without NHIS

	(1) Illness	(2) Sought care	(3) Preventive
1) LEAP*2012	-0.01	-0.01	-0.01
	(0.30)	(0.25)	(0.61)
2) DDD	-0.07	-0.06	0.02
	(1.30)	(1.34)	(0.88)
	(N=4880)	(N=4775)	(N=4328)

t-statistics shown in parentheses beneath coefficients; coefficients significant at 5 percent or better shown in bold.

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